. . Index to Contents, April, 1940 . .

The Annual Index to Contents appears at the back of the December issue each year

Airports and Aviation
Asphalt Runways at Washington Airport 13
New York City's Municipal Airport 13
St. Paul Airport Built Above Floods 80

Bridges and Viaducts
$400,000 for Akron Viaduct Repair 11

Buildings, Public
A New Water Tower Houses Town Offices 70
Old City Hall Becomes Streamlined Municipal Building 111

Business and Industrial Development
Successful Advertising Attracts Industries 113
Century Honor Roll, Baltimore Business 113

Business Machines
Fast Machine Accounting Pays Cost in Collections 97
Addressing Machine with No Plates 147

City Manager Plan
City Manager Appointments 115

Civic Education
Recognition for New Citizens 72
Bangor's Annual Report Tells a Story That the Citizens Can Understand 83
Mr. Taxpayer, Complainant, Confers with Mr. Public Servant, Explainant 84
Dramatic Open House Shows Government to Citizens 115
Two Texas Cities Set Up Complaint and Information Bureaus 129

Conventions
Conventions—When and Where 143

Finance and Taxation
New York Invites Owners to Ask Partial Tax Exemption 5
Getting Tax-Exempts to Pay Something 7
Tax-Delinquent Subdivisions—A Liability That Might Become a City Asset 87
Fast Machine Accounting Pays Cost in Collections 97
The Municipal Bond Market 115
"Value" in Real Estate Assessments 133

Fire Prevention and Control
In Case of Fires 7
Yonkers Fire Department Well Equipped 15
Frequent Mention of Automatic Sprinklers 15
Modern Apparatus Goes to Joplin Fires 15
Small and Efficient Fire Department 85
Bigger Fire Year in New York City 89

Forward Steps
Items Contributed by Officials and Others 111

Government and Administration
Southern Branch of U. S. Conference of Mayors Passes Resolutions 5
Open House Dramatizes Government 115
Law Enforcement—For Whom? 121
Complaint and Information Bureaus 129

Housing
New York Invites Owners to Ask Partial Tax Exemption 5
Public Spending, Roads and Slum Clearance 61
Public Housing Projects Need Low Utility Rates 129

Legal Decisions
Zoning and Planning Notes 135
Municipal Law Notes and Legal Decisions 137

Lighting, Outdoor
Proof, Good Lighting Reduces Accidents 123
Bright Nights in Van Wert, Ohio 123
Uniform Lighting, Black-Surface Street 125
Sodium Light for Safety 125
It's That Yellow Light 127
Modern Lighting Coming to Bridgeport 127

Motor Equipment
Motor Grader, Owatonna 11
Yonkers Fire Department Well Equipped 15
Life-Guard Cars of Los Angeles 15
Modern Apparatus Goes to Joplin Fires 15
All Motor Vehicles Tested by Cincinnati's City Garage, Which Also Maintains City-Owned Equipment 75
Service Line Trenches Dug, Not Bored 145
Street Flusher with Automatic Controls 145

Names for Towns
Strange Names for Towns 101

News and Illustrations
Hints for Officials 145

Parks and Recreation
Life-Guard Cars of Los Angeles 15
New Restaurant for Zoological Park 63
All Elements Work for Playground 103
Snow-Plows for Walks and Skating Rinks 153

Planning and Zoning
Action by Regional Conference 5
Tax-Delinquent Subdivisions—A Liability That Might Become a City Asset 85
Small Town Zoning for Two-Family Houses 93
Zoning and Planning Notes 135

Police
Pontiac Goes Safe 91

Power Plants
To Install Turbine Generator Outdoors 91
New 100-Hp Power Unit Has 6-Cylinder Diesel 149
New Electric Plants with Diesel Power 151

Publications
Municipal and Civic Publications 139

Public Utilities
Public Housing Projects Need Low Rates 129
Milk Distribution as a Public Utility 131

Public Works
AISC Standard Specification Adopted by 203 Cities 82

Reporting
Bangor's Annual Report Tells a Story That the Citizens Can Understand 83
Mr. Taxpayer, Complainant, Confers with Mr. Public Servant, Explainant 84

Safety, Public
Removing Hazards Created by a Tornado 76

Sewers and Sewage Treatment
City Sewage and Trade Wastes Treated Separately 64
Close Control of Operation of Small Sewage Plant 77
Odor Absorbers for Sludge Boats 151

Street Cleaning and Snow Removal
Street Flusher with Automatic Control 145
Snow-Plows for Walks 153

Street Construction and Maintenance
Sand Barrels at Corners Stop Sidewalk Accidents 11
Public Spending, Roads and Slum Clearance 61
New Municipal Asphalt Plant, Cleveland 67

Traffic Control and Facilitation
Cincinnati's City Garage 75
Pontiac Goes Safe 91
Narrow Steel Divider Makes Street Safer 117
Signs Speed Seattle Traffic 119
Schoolboy Sign Found Effective 119
New Committee to Study City Highway and Mass Transportation Plans 129
Neon Traffic Lights in Required Colors 153
Large Traffic Signs for Quick Reading 155

Transportation
Time to Look at Trolley Coaches 7
New Committee to Study City Highway and Mass Transportation Plans 129

Waste Collection and Disposal
New Refuse Incinerator at Austin, Texas 60

Water Supply and Water Works
Water and Electricity Free in December 9
Protect City Reservoirs from Losses by Silting 9
Drought in the East May Mean More Meters 9
Modernization Program at Winnetka, Ill. 9
Water-Conservation Program on Vast Scale 55
Facts, Opinions and Recommendations on Philadelphia Water Supply 59
Zeolite Water Softening at East Lansing 62
A New Water Tower Houses Town Offices 70
Rehabilitating Old Wells at Camden 73
Water-Rate Boost in West Allis, Wis. 74
Threshold Treatment for Taste and Odor Control 79
Water Rates and Service Charges 105
Purification Packaged for Small Water Works 145
Service Line Trenches Dug, Not Bored 145
Filter Surface Washers Eliminate Mud Balls 147
Meter Settings with Brass Couplings 153

Works Progress Administration
WPA Wages Contribute Over Half of Relief Bill 129

VOL. LV APRIL
No. 4 1940

The American City

Issued Monthly by the
American City Magazine Corporation
470 Fourth Ave., New York
EDGAR J. BUTTENHEIM, President
HAROLD S. BUTTENHEIM, Editor
THEODORE REED KENDALL
Secretary and Engineering Editor
M. V. FULLER, Associate Editor
ALDEN W. WELCH, Research Editor
HERBERT K. SAXE
Treasurer
MYRON MacLEOD, Advertising Mgr.
PRENTICE C. FORD, Asst. to President

•

BRANCH OFFICES
Daily News Building, Chicago
GEORGE S. CONOVER, Vice-President
Mills Building, San Francisco
DUNCAN A. SCOTT, Representative

•

Subscription, $2 per annum in United States and Canada ($3 to foreign countries)
Single copies, 35c
Back numbers, 50c
Entered as second-class matter, July 29, 1910, at the Post Office at New York, N. Y., under Act of March 3, 1879.
Printed in U. S. A.

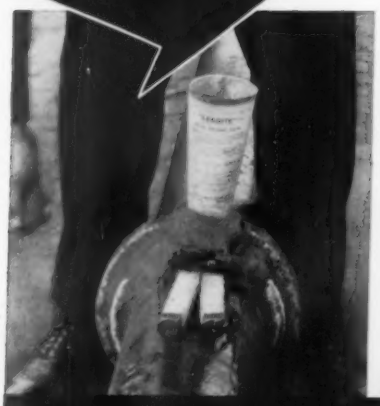
•

In THE MUNICIPAL INDEX AND ATLAS (the annual reference volume of data and condensed catalogs published by the American City Magazine Corporation) readers will find statistical material, and articles on a wide variety of municipal and public works subjects, not published in the monthly issues of the magazine.

See pp. 17, 18, 21, 22, 139, 141 for catalogs and publications on municipal and civic subjects

For Index to Advertisements see page 160

Saves TIME AND MONEY ON THE JOB!



1. Joint Made Ready to Pour

2. Pouring the Joint

3. Pouring Completed

4. Cutting Off Gate

5. Joint Complete

Yes, a real time and money saver

NO CAULKING

—widely used for over 35 years

The Pioneer Self-Caulking Material for C. I. Pipe

LEADITE

Trade Mark Registered U. S. Pat. Office

Makes a Good Tight Joint which Improves with Age

THE LEADITE COMPANY • GIRARD TRUST COMPANY BLDG., PHILADELPHIA, PA.

Southern Mayors Adopt Resolutions

Action by Last Month's Regional Conference

ON March 8 and 9, a meeting of the Southern Regional Conference of the United States Conference of Mayors was held at Birmingham, Ala. Resolutions were adopted concerning taxation, Federal taxation of municipal bonds, the work program, housing, fire insurance rates, and airports.

Taxation:

The Conference pointed out the close relationship of the tax and revenue systems to practically all the major issues facing the cities, and the need for eliminating conflicts in taxation, and coordinating Federal, state and local revenue systems. The Conference resolved, therefore, to petition the President of the United States to initiate, in cooperation with duly elected public officials of the cities and states, a nation-wide survey of the existing tax structure, including recommendations for improvement in the present tax situation.

Federal Taxation of Municipal Bonds:

The Conference opposed taxation of municipal bonds because: first, such a tax would result in higher interest rates upon state and municipal bonds, and a consequent increased tax burden on citizens; and, second, such legislation would do violence to the fundamental concepts of the sovereign powers of the states as consistently upheld by numerous decisions of the United States Supreme Court.

Work Program:

The Conference pointed out that although it is the accepted responsibility of states, counties, and cities to care for unemployables, it is the responsibility of the Federal Government to provide jobs for employable relief cases. The present WPA program is not now fulfilling this responsibility. It was therefore resolved: first, to request the Conference's President to urge upon the President of the United States the necessity of basing the WPA appropriation on the actual needs existing in the cities of the country; and, second, to submit to the proper Congressional committees a factual statement covering unemployment and relief conditions now facing the municipalities.

Airports:

The Conference resolved to submit at once to the President, the Civil Aeronautics Authority, and the proper Congressional Committees, its re-affirmation of the recommendations of the Special Committee of the United States Conference of Mayors, which makes the Federal Government financially responsible for all air navigation facilities (including all lighting, communications, meteorological and runway requirements), and the cities responsible for land, buildings and management.

Housing:

A resolution was made to petition Congress to act favorably on the pending legislation providing for a continuing housing program.

Fire Insurance Rates:

Because the amount of fire losses incurred by cities on municipal properties bears no reasonable relationship to the premiums paid, and there exists no adequate public control over the determination and fixing of fire insurance rates, the Conference resolved to petition the Temporary National Economic Committee, the so-called Monopoly Committee, to institute immediately a national fire-insurance survey, to the end that information may be made available to the cities of the country.

New York Invites Owners to Ask Partial Tax Exemption

LAST month real estate owners in the city of New York had the unique sensation of reading in the newspapers an invitation to apply for certain tax exemptions on property improvements made in recent years. This unprecedented step was announced by President William Stanley Miller of the Tax Department as taken with the approval of Mayor F. H. LaGuardia as a service to the property owners of the city, especially owners of small properties, particularly homes.

In 1936, at the instigation of the Tax Department, as mentioned in THE AMERICAN CITY at the time, Mayor LaGuardia obtained from the State Legislature an enabling act upon which the Municipal Assembly enacted a local law granting a five-year tax exemption for the value added by renovations to old buildings, provided the improvement did not enlarge the size of the existing structure. The amount was limited only by the previous assessment upon the existing building.

The object of this legislation was to encourage owners of dilapidated or obsolescent property, to spend freely in putting their buildings into proper shape. The law applies to all kinds of buildings, homes, multiple dwellings, factories, office buildings, warehouses, etc.

The Mayor appointed a Committee on Property Improvement, which has headquarters at 90 Park Avenue, to assist property owners wishing to take advantage of the law, offering them free consultation with a panel of architects, real estate experts and finance experts.

It was recognized particularly, then, that regardless of the amount of new low-cost housing that could be obtained from various Federal, state and municipal agencies, it was imperative that all old tenements which could be made properly habitable be remodeled to provide inexpensive housing for the lower income groups.

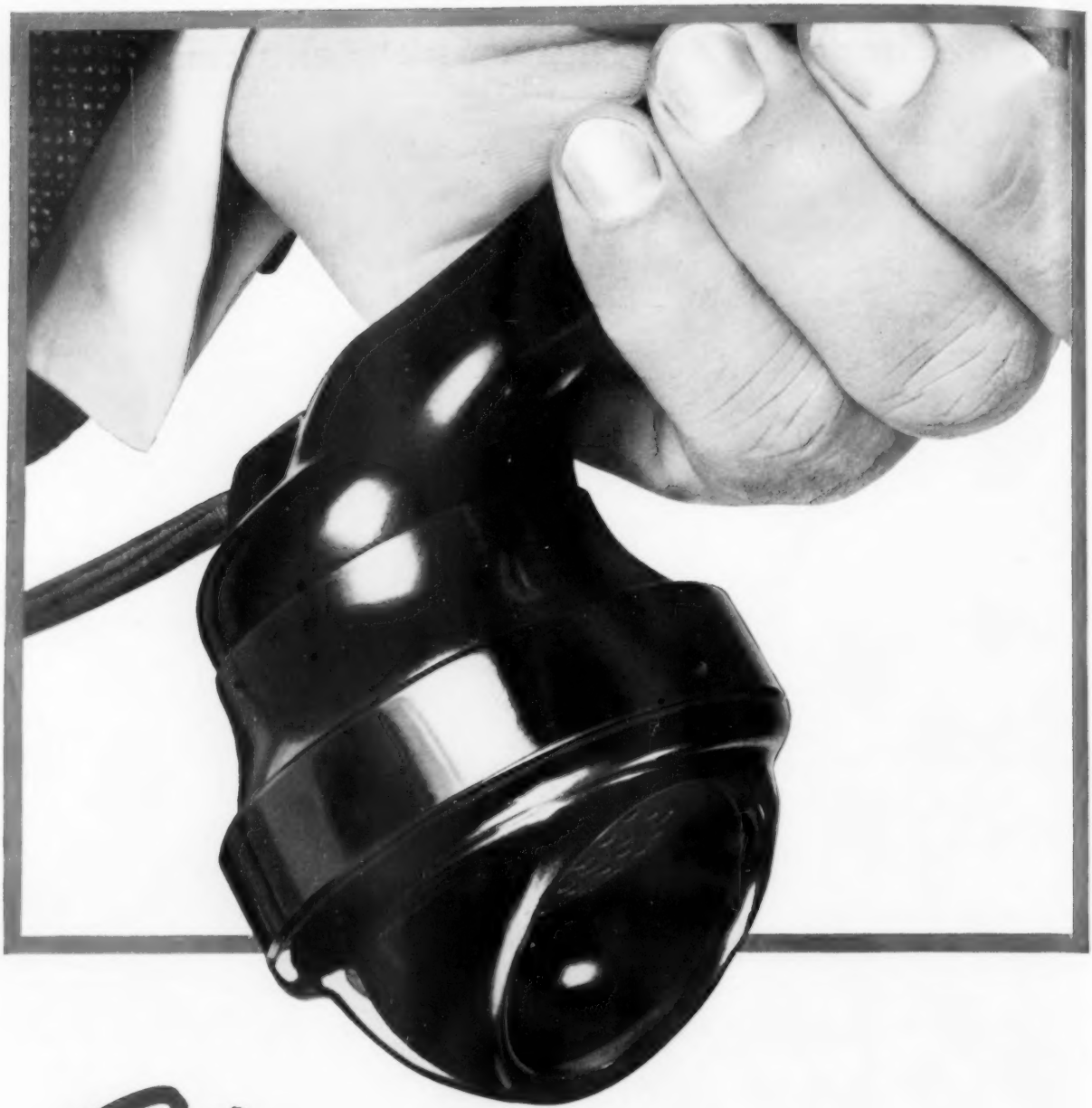
A wide publicity campaign was carried on for more than a year, with the fullest cooperation of the daily newspapers, radio stations and magazines. The statement issued on March 16 says:

Thousands of property owners were induced to rehabilitate their property, but many of these strangely have been neglectful of their own interests and have failed to apply for the tax exemption to which they are entitled. Unfortunately for them, the law provides that exemption may be granted by the Tax Commission only upon their application, and while the Tax Commission has been anxious to grant these exemptions, it has found that several thousands of property owners have not filed the simple papers required.

President Miller accompanied his statement with the following table:

REHABILITATION EXEMPTION FROM JANUARY 1, 1937, TO FEBRUARY 21, 1940, Under New York City Local Laws 64 of 1936 and 108 of 1939

	No. of Parcels	Exemption Granted
Manhattan	3,665	$20,930,900
The Bronx	576	1,970,050
Brooklyn	2,168	5,272,900
Queens	816	1,034,700
Richmond	130	235,600
TOTAL	7,355	$29,444,150



Big **enough for the job**

We live in a big country and it takes a big telephone company to give good service to millions of people. The Bell System is doing its part in providing for the nation's telephone needs, whatever they may be.

But the Bell System aims to be big in more ways than mere size. It aims to be big in the conduct of its business, in its relations with employees and its plans for the future. All of this helps to give the nation quick, dependable, courteous telephone service at low cost.

BELL TELEPHONE SYSTEM

During April we hope you will remember to mention THE AMERICAN CITY.

Our Municipal Notebook

Time to Look at Trolley Coaches

THIS is the period in local public transportation when the cities can have almost any type and size of vehicle they want. Now is the time to make up minds, for this is the pre-standardization era.

Last year's 4,100 buses and 600 trolley coaches were built in some 50 models. This indicates that the operators themselves have their own convictions and do not accept those of others as final. By the same token the mayor and council may also have a constructive say as to what type, style and size of public-carrier vehicles shall carry their citizens. They would do wisely to study the proposals of the local operator.

Would you like to have trolley coaches in your city? If you would, now is the time to suggest it. During the last four years they have gone into service at the rate of some 450 per year, and 100 more than that average in 1939. Being larger than most gasoline buses, they usually carry more passengers and make more money. The maintenance of a trolley coach averages $500 per year compared with $800 for a street car and $1,300 for a motor coach. A few years ago they were operating in 34 cities; now they are in 66 cities.

Why are they not in the other 126 cities of more than 50,000 population? In a number of instances because, frankly, the transit operator does not know what to do about it. He sees the rod and the wire of the trackless trolley and they do not comfort him. He has a deep-down feeling that the motor-bus is the thing. It is, if he cannot visualize plenty of passengers, if the city is comparatively small and compact, if his electric power is not as low-priced as it should be.

In this connection it may be of interest to note the financial results estimated to be obtained in Seattle where trackless trolley-coach lines are in process of supplanting present street-car service. Out of every dollar of revenue collected on the street cars, 80 cents was required to pay operating expenses, leaving 20 cents available for depreciation, renewals, and interest charges. In contrast with this, the trolley coaches are estimated, in the plan prepared by The Beeler Organization, to require less than 60 cents for operating expenses, making available some 40 cents out of every dollar, or twice

as much as heretofore for other charges. Interesting also is the fact that Mayor Arthur B. Langlie, who sponsored the transformation, was reelected March 12 by a plurality of 50,697 votes.

When the city of Seattle decided to buy trolley coaches, it bought 235 of them. It is safe to predict that Seattle is going to get service out of those trackless trolleys, and also the kind of mass experience which should reveal whether or not trolley coaches in Seattle are profitably popular and low in maintenance cost. With Seattle's municipally owned hydro-electric power, they are bound to be low in operating cost. With that great electric system back of the wires, Seattle's Twins and Brills are bound to be quick, smooth, warm and well-lighted.

It may be that city officials should view with particular appreciation the transit company that installs trolley coaches in any quantity, for such installation is a clear indication of confidence in the city. When vehicles are too old, and new ones must be purchased, the operator naturally thinks of motor-buses. No one will blame him for buying buses.

But do you want an all-bus city, or would you prefer electric transportation on the principal traffic streets, with motor-buses feeding the electric transportation system? Now is the time to decide, while there is a choice. Quite a number of companies would like to operate trolley coaches. City officials can do a great deal to furnish the gentle friendly push that would bring them. For to build permanently, confidence is necessary. Transit companies are certainly not self-sufficient. Their confidence in a future of achievement for the system and for the city that encloses the system, must arise not only from their own knowledge of what is best but also from a belief that what they would do will meet with fair play.

Getting Tax-Exempts to Pay Something

TAX-EXEMPT PROPERTIES are frequent cause for thinking in many municipalities, especially in the stringent times not yet forgotten. Dobbs Ferry, N. Y., has just done a little something about it. That village of 5,700 population embraces tax-exempt institutions assessed at $7,000,000, or 34 per cent of the total valuation of all village property. Dobbs Ferry must have a new 1,000-gallon pumping engine—needed as much to protect the tax-exempts as anybody else. So Mayor Joseph J. Walker divided the estimated cost by 6 and asked five tax-exempt corporations to share with the municipality in the purchase price of the pumper. Representatives of four of the institutions have accepted in the amount of $2,400. The gracious gesture is well advised.

In Case of Fires

AN IDEA OF WHAT A CONFLAGRATION would require is given by two fires that broke out in downtown New York City in the late afternoon and early evening of February 2. They were severe fires, but one was held to the original building and the other to two buildings, by the use or presence of 75 pieces of apparatus and the discharge of so much water that it is believed that the existing water shortage was accentuated.

The first fire was in a six-story loft. A freight-elevator operator gave the alarm, first by bell in the building and then by fire-alarm box. Responding apparatus included twenty-five pumping engines, one water tower, five hook-and-ladders, one rescue truck, three ambulances, and a fuel wagon. Almost immediately six men were overcome, and soon five more were injured. The damage was estimated at $250,000. Traffic was stopped for four hours. The second fire destroyed two five-story buildings.

The use of all this apparatus required that nineteen pieces in adjoining areas be moved up, with consequent weakening of those areas. The fact that these two fires required the moving of nearly one hundred pieces of apparatus makes it evident that the large cities are not over-equipped, since more than two fires could occur at about the same time and even in the same area. At such a time, enough modern apparatus with trained crews is what taxpayers want.

With the installation of a second large capacity elevated tank in eight years, Indianapolis, Indiana, reaffirms its confidence in the ability of elevated storage to solve the modern problems of water supply and distribution.

CHICAGO BRIDGE & IRON COMPANY

Chicago	2127 McCormick Bldg.	Philadelphia	1616-1700 Walnut St.	San Francisco	1033 Rialto Bldg.
New York	3308-165 Broadway Bldg.	Boston	1501 Consolidated Gas Bldg.	Houston	2919 Main Street
Cleveland	2236 Rockefeller Bldg.	Birmingham	1502 N. Fiftieth Street	Tulsa	1625 Hunt Bldg.
Detroit	1501 Lafayette Bldg.	Dallas	1406 Liberty Bank Bldg.	Los Angeles	1403 Wm. Fox Bldg.

Plants at BIRMINGHAM, CHICAGO, and GREENVILLE, PA.
In Canada: HORTON STEEL WORKS, LIMITED, FORT ERIE, ONTARIO

Do you mention THE AMERICAN CITY? Please do.

Water Meters and Economies

Water and Electricity Free in December

A HAPPY NEW YEAR was enjoyed by all water and electricity users in Gaffney, S. C., because, according to a letter received from L. V. Gaffney, Superintendent, Board of Public Works, on December 30, 1939, the Board mailed all water and electric bills to consumers for the month of December marked "Paid." This is the eighth consecutive year in which the profits of the electric and water utilities have been such that the Board of Public Works has been able to offer this Christmas present to all consumers.

Protect City Reservoirs from Losses by Silting

MILLIONS OF TONS of soil carried by flood waters draining from the red hills of the Piedmont section of southeastern United States are causing an annual silting damage of more than $110,000 to 22 North Carolina municipal reservoirs recently studied by erosion and sedimentation scientists of the U. S. Department of Agriculture. Alexis N. Garin, of the Soil Conservation Service, and G. W. Forster, of the North Carolina Experiment Station, made an economic survey of these 22 reservoirs containing 98 per cent of the impounded public water supply of the region. The average loss of water storage space in these reservoirs amounts to 0.8 per cent of the original capacity every year.

Proper erosion control measures, such as reforestation, strip cropping, terracing, cover crops, crop rotations—carried out on the lands draining into these reservoirs—would result in a substantial saving, possibly as much as one-half the damage annually after the first four years, according to the preliminary estimate.

Soil-erosion control work on the High Point city lake watershed serves as a basis for this estimate. In 1934, a survey of the million-dollar High Point reservoir showed that the storage capacity was decreasing at a rate of almost one per cent a year. After less than four years of intensive erosion-control work on the watershed, another survey was made which showed that streams flowing into the reservoir at High Point deposited only half as much sediment as they did four years ago. As a result of this work, the useful life of the reservoir has been more than doubled, and there has been an annual saving of an average of 21 cubic feet of soil on every acre in the watershed.

The 22 reservoirs, located mostly on small streams away from the towns, were constructed at an original cost of more than $8,000,000. In many cases the reservoirs are located at the only available sites for municipal water storage for these cities. Substitute reservoirs obviously would be much more costly.

It is well known that the purifying of muddy water is expensive. The more silt, mud and other solid particles contained in the water, the more alum and other chemicals are necessary to purify it for domestic use, entailing also large and expensive filters, high electrical power cost, and more time for producing a satisfactory water. The Garin-Forster study reveals that over 13 billion gallons of water are treated every year in the 22 municipal water supplies investigated, and that the annual cost of purifying the water is $934,000, or $70 per million gallons of water treated. By decreasing the amount of suspended matter 25 or 30 per cent there would be a reduction of approximately $7 per million gallons of water treated every year, or an annual saving of $95,000 in addition to savings from the prevention of reservoir silting.

Drought in the East May Mean More Meters

FOR MANY YEARS it has been standard practice in the water departments of progressive cities to conserve the water supply by the universal installation of water meters. In New York City, however, the flat rate has prevailed for practically all domestic services, and only 26 per cent of the services of the city now receive metered water, according to the latest reports.

The Department of Water Supply, Gas and Electricity is seriously considering a more extensive use of meters. However, a spokesman for the Department has stated that universal metering is not being considered for the immediate present, but may have to be resorted to before the new Delaware River water supply is available, which will be about five years from now.

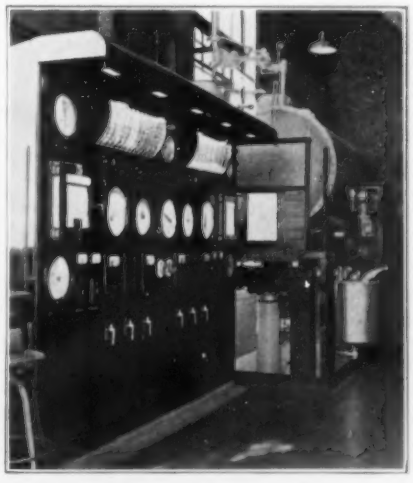
Political stage-setting has been the chief reason for the failure of New York City to adopt universal metering. Generally, owners of large apartment houses and other large real estate operators have objected to it and have been supported by the political groups.

It would cost about $20,000,000 to install new meters on all services in New York City, and it is estimated that this would save about one-fifth of the water delivered to the city, much of which is now wasted. It is well-known that the small consumer's water bill would undoubtedly be decreased rather than increased with metering, for this has been the universal experience throughout the United States. The water consumers now metered are office buildings, hotels, garages, theaters, piers and business buildings.

Modernization Program at Winnetka, Ill.

THE MUNICIPAL ELECTRIC PLANT and water works of Winnetka, Ill., are located at the foot of a high bluff on Lake Michigan. As a part of a long-range modernization program, which will be completed by December, 1943, a new 3,000-kw turbo-generator was installed in 1938 to operate on steam at 220 pounds and 100 degrees of superheat until new boiler equipment designed for 425 pounds could be installed.

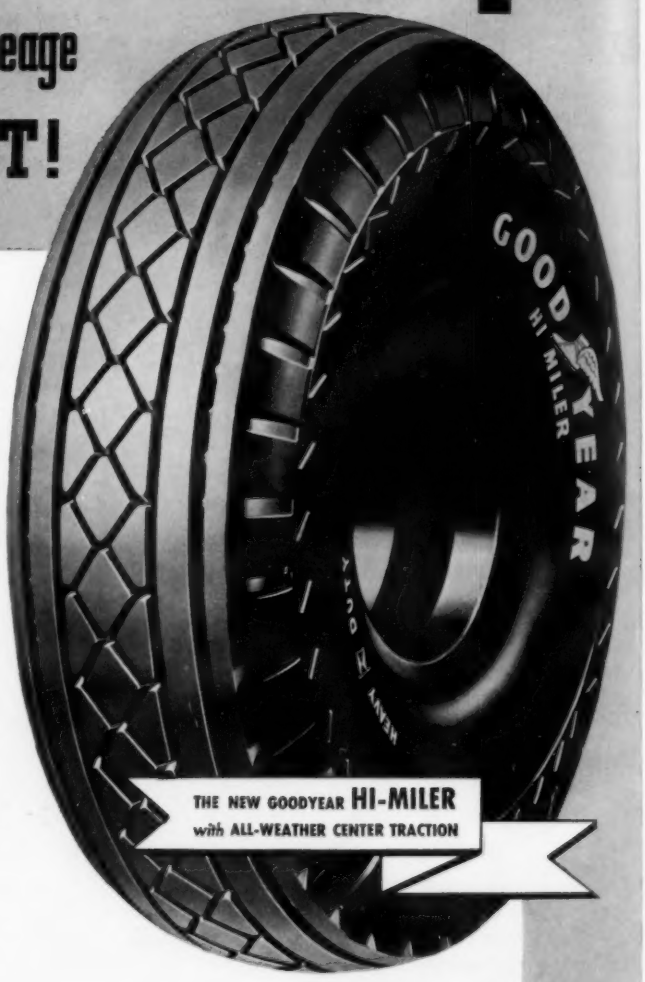
Since that time two 450-pound boilers with 40,000 pounds per hour steaming capacity have been installed. Included in the equipment are two Cochrane flush-mounted electric recording, indicating and integrating flow meters measuring the high-pressure steam from the boilers. The present capacity of the utility is based on a load of 3,550 kilowatts. The third step, to be completed by December, 1943, will bring the rated capacity of the plant to 4,550 kilowatts.



The Panel Board at Winnetka, Ill.

This New Tire Triumph

gives you up to 25% longer mileage ..AT NO EXTRA COST!



ANOTHER MAJOR ADVANCE IN TIRE ENGINEERING now comes from Goodyear's great development laboratories—a truck tire whose many new features make it the finest buy ever offered at its price.

IT'S THE NEW GOODYEAR HI-MILER and it has proved its right to that name by outrunning regular truck tires up to 25% — *both on our test fleets and in commercial service.*

THIS LONGER, SLOWER WEAR results from the Hi-Miler's flatter tread design that puts more rubber on the road—from its four sturdy riding ribs that take the brunt of wear — and from its closer-nested center traction that provides traction and road grip.

MORE ENDURANCE, MORE RESISTANCE TO BRUISING is built into the cord body of the Hi-Miler by the use of a new, tougher, stronger low stretch Supertwist cord. A stronger bond between tread and body is secured by a new technique in tire construction known as "Multiple Compounding."

ALL THIS ADDS UP to a tougher, stronger, longer-wearing truck tire whose greater immunity from heat and fatigue insures far lower cost-per-mile service.

WHAT ABOUT PRICE? That's the biggest surprise of all! For all its added value this great new Hi-Miler sells at a figure that verifies this truth: *Goodyear tires are as good as you think and cost far less than you imagine.*

All-Weather, Supertwist—T. M.'s The Goodyear Tire & Rubber Company

MORE TONS ARE HAULED
ON GOODYEAR TRUCK TIRES
THAN ON ANY OTHER KIND

THE GREATEST NAME IN RUBBER
GOODYEAR

Streets and Bridges

The North Main Street Viaduct, Akron, Ohio, the Deck of Which Has Been Repaired by Relief Labor

Akron Viaduct Repair a $400,000 Project

AKRON'S 17-YEAR-OLD North Main Street viaduct, which was discovered in a weakened and dangerous condition, has been reinforced and repaired as a relief project, at a cost of more than $400,000. Defects resulting from neglected maintenance and other factors have been corrected, putting this important link in Akron's traffic system in a position again to handle safely its full load of motor transport. Since its completion in 1922, maintenance had been neglected, and owing to lack of proper drainage facilities, poorly designed expansion joints, use of chemicals for ice removal, and probably inadequate concrete control, the concrete had become porous, spalling off over large areas, exposing the reinforcing steel and endangering the life of the structure.

Relief workers corrected these conditions, using pneumatic hammers to chip off the split and porous concrete, steel joints were tightly welded together, and old expansion joints were replaced with new copper and rubber joints. Seams were filled with Gunite shot into the deepest crevices by air pressure.

Faulty drainage, one of the causes of the viaduct's deterioration, was corrected by the installation of 34 scuppers to replace the 6 of the original construction. A new steel gutter and a new sewer beneath the viaduct speed up drainage.

The materials used in the repair of the half-mile viaduct included: 128,000 square feet of Gunite; 4,812 lineal feet of expansion joints; 2,000 cubic yards of concrete; 99 tons of reinforcing steel; 6 tons of structural steel; 2,700 square yards of bituminous pavement; and 2,660 lineal feet of corrugated downspouts. A total of 514,000 square feet of concrete was steam-cleaned and waterproofed, 288,000 pounds of reinforcing steel was cleaned, 2,700 square yards of bituminous pavement was laid, and 130 square yards of brick pavement relaid.

To minimize the hazards of work on the viaduct, situated 130 feet above the B. & O. tracks, safety measures were emphasized and the work was completed without any serious accident. A large movable steel scaffold was set up to expedite the work and afford another measure of safety. Safety harnesses were worn by the men who worked at the edge of the 130-foot structure.

Upon the discovery of the weakened condition of the viaduct, Arthur F. Ranney, Summit County Engineer, prohibited traffic from all but the center lane, but as the work progressed it became possible to open two lanes to traffic, and this helped relieve the serious congestion that resulted from the first severe restriction.

Of the total $434,000 cost of repairing the North Main Street viaduct, Summit County contributed $209,000, the bulk of which was expended for materials, while the Work Projects Administration provided $225,000, most of which was spent for wages.

Sand Barrels at Corners Stop Sidewalk Accidents

A SUCCESSFUL CAMPAIGN to put an end to accidents on icy sidewalks was carried out last winter in Kiel, Wis., and is being repeated this winter, according to Albert Lueloff, Superintendent of Streets. A total of 35 metal barrels was purchased from the local furniture factory at 50 cents each, there being 15 50-gallon barrels and 20 25-gallon barrels. Covers for the barrels were made from galvanized sheeting at a cost of $1.50 per cover. Experience has shown that the 25-gallon barrels are much easier to handle than the larger ones. Each was painted green and the bottoms painted red, before they were placed at nearly every crossing. They were filled with sand mixed with calcium chloride at the rate of 50 pounds of calcium chloride per cubic yard of sand.

One man kept the barrels filled with this mixture from the time cold weather started and there was any danger of icy sidewalks. Householders went to the barrels with pails and secured the treated sand and spread it on their sidewalks. In the spring the barrels were removed from the streets, washed out, painted inside and out with oil, and stored in the city shed. During the winter of 1938-39, when this service was first instituted, no accidents were caused by icy sidewalks.

DON'T FORGET
American Public Works Association Convention
Detroit in October

The city of Owatonna, Minn., is rebuilding its streets, using an Austin-Western 99 motor grader for a variety of operations

Patent Pending

MURDOCK Presents the *New*

"Air Lock"

ANTI-FREEZING OUTDOOR DRINKING FOUNTAIN

FEATURING

The First Safeguard Ever Offered Against Pollution of Fresh Water Supply by Clogged Sewer Without the Use of a Mechanical Device

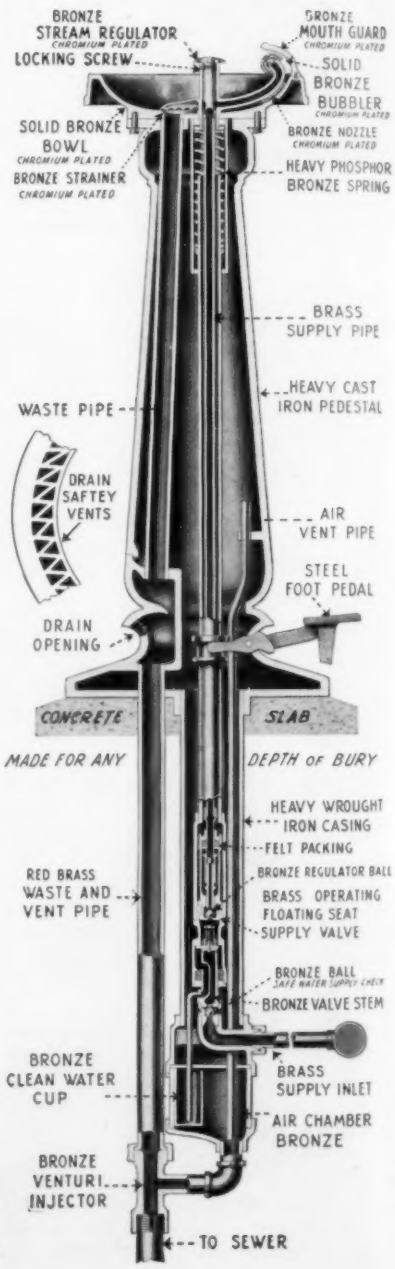
An AIR LOCK does it! The one problem which long has challenged able water engineering minds for simple solution yields to an air lock.

In our new "Air Lock" Anti-Freezing Outdoor Drinking Fountain, we have successfully applied an Old Well-Known Principle of Hydraulics to prevent contact of polluted water from backed-up sewer with fresh water supply without employing any mechanical device.

We invite you to write for complete details of this latest Murdock achievement.

APPROVED BY HEALTH AUTHORITIES

Our "Air Lock" Fountain has been tested and approved by a number of prominent Boards of Health. "The Murdock Anti-Freezing Air-Locked Sanitary Drinking Fountain meets the drinking water safeguard requirements provided in the State plumbing code," says the Board of Health of one of our leading states. Similar approvals have been obtained from other State and Municipal officials.



MAINTENANCE AND MAINTENANCE COSTS REDUCED TO A MINIMUM

Our "Air Lock" Fountain is connected directly to sewer. This eliminates the need of pits in localities where pits have previously been required. This fountain is fool-proof and trouble-proof. It has been specially designed and constructed to reduce to a minimum the necessity for maintenance with the exception of an occasional re-washering. It is the sturdiest of all Murdock fountains.

COMPLETELY NEW FOUNTAIN IN DESIGN AND CONSTRUCTION

In addition to the air lock, we have incorporated in our "Air Lock" Fountain a new type sidestream bubbler and mouthguard; a simplified stream regulator and have greatly improved the construction of pedal and pedestal at pedal opening; and for the eye, we have simple classic lines of enduring beauty. Its attractive appearance conforms to the highest standards of modern architectural design and natural setting.

BRONZE, BRASS AND IRON THROUGHOUT

The new Murdock "Air Lock" Anti-Freezing Outdoor Drinking Fountain is built to endure. It resists to the utmost the abuse to which a fixture of this type is sometimes subjected in public use. It is the most sanitary and practical outdoor drinking fountain obtainable. All inner working parts come completely and permanently assembled.

Write for "The Story of the Air Lock Fountain"

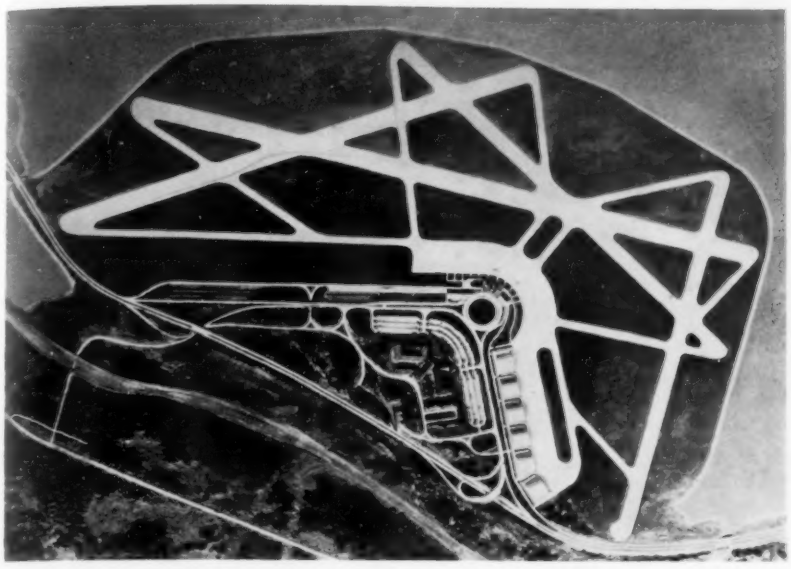
THE MURDOCK MFG. & SUPPLY CO.
426 PLUM ST. CINCINNATI, OHIO

MURDOCK

SINCE 1853

The Most Reliable Name on Water Service Devices

Airport Construction



Plan of the New Washington, D. C., National Airport, Showing the Arrangement of Runways, Taxiways and Aprons to Be Paved with Asphalt

Asphalt Runways at Washington Airport

THE RUNWAYS, TAXIWAYS, AND APRONS at the new Washington, D. C., National Airport are to be paved with the largest quantity of plant-produced asphaltic mixtures yet used for surfacing any airport project. Pavement equal to more than 60 miles of a 2-lane highway, 20 feet wide, will be installed on this latest airport, designed for extremely heavy air traffic.

The Washington National Airport is within easy taxi distance of Washington's downtown hotels and all Government offices. The main runways are to be 200 feet wide and will have a combined length of 21,257 feet.

Less than two years ago the major portion of the site was the bottom of the Potomac River. An area in excess of 700 acres has been reclaimed by filling with more than 18,000,000 yards of sand and gravel from the river. Thus, while restricting the river's banks, its hydraulic flow has been increased by the deepening.

It is reported that the dredged-in material provides an excellent subbase for the runways and other surfaces. The sub-base is now being prepared by thorough stabilization preparatory to receiving the asphaltic base and surface courses. The latter will be processed, hauled and compacted by methods similar to those employed in street and highway construction. Exclusive of the stabilized sub-base of pumped-in sand and gravel, which is to be primed with a bituminous material, the hot-laid mixture of sand, gravel and asphalt in the base and surface will have a combined cross-sectional thickness equal to 3½ inches.

The parking areas are designed to accommodate 5,000 vehicles, and the parking facilities are arranged in step-like formation so that each parking strip rises 4 feet above the preceding strip.

New York City Opens North Beach Airport

THE NEW MUNICIPAL AIRPORT of New York City, LaGuardia Field, constructed by the WPA, was dedicated on October 15, 1939. At this port it is possible for passengers to make the single change necessary for a flight between the West Coast and Europe or Bermuda, or to take a plane to Miami to connect with Central or South America. The airport is located about 20 minutes by automobile from the Grand Central zone.

The North Beach Airport features a 558-acre harbor for seaplanes protected by a 1,763-foot bulkhead of steel sheet piling and with a depth of 15 feet. The marine terminal is a two-story structure 144 feet in diameter with two wings, each 54 by 45 feet, extending toward Bowery Bay. To the southwest of this building and facing the same traffic plaza is the Marine Terminal hangar under lease to the Pan-American Airways. This is a five-sided building with two adjoining open sides facing the west, each 204 feet 4 inches wide, and north and south open sides each 169 feet 7 inches wide. The fifth side, toward the plaza, is 354 feet long. Each of the four openings is enclosed by electrically operated doors of the same type as those on the landplane hangars, to a seaplane height of 45 feet clearance. The height of the hangar is 75 feet from floor to crown.

There are four runways at the landplane base, 6,000, 5,000, 4,500 and 3,532 feet long. The 6,000- and 5,000-foot runways are 200 feet wide, and the others 150 feet wide. Taxi runways 100 feet wide connect the runways with an apron 400 feet wide and 6,200 feet long, which extends in an arc in front of the landplane base buildings. All runways are of five-course asphalt macadam. The apron is of concrete for a distance of 2,500 feet, where it is on the original ground, and of the same asphalt macadam construction as the runways where it is on fill.

The administration building is a rectangular structure 300 by 60 feet, of two stories and a basement floor above ground. A circular section, one story higher and 170 feet in diameter, occupies the center of the rectangle and extends toward the field. The concourse of the terminal occupies a rotunda 90 feet 6 inches in diameter on the main floor. In the control tower on the roof the operator has the entire flying operation of the airport, including the modern system of lighting and radio, under his control.

The six landplane hangars are identical in size and appearance. Each is 350 feet long by 165 feet deep and is 72 feet from ground to crown. The field side of each hangar is enclosed by four electrically operated steel and glass doors, so arranged that they are raised and swung out to a horizontal position, leaving an airplane height clearance of 42 feet. There is a single pillar in the middle of the opening, with a clear space of 163 feet 5 inches on each side.

In general, the New York Municipal Airport at North Beach has all the most modern equipment available. To the pilot of an incoming plane at night the field will appear dark; the edge of the field and the particular runway he is to use are outlined in light, with 7,500,000-candlepower floodlights illuminating that one runway. As he lands, the taxi runway he is to use is outlined, and the apron is illuminated by floodlights.

GAMEWELL VITAGUARD

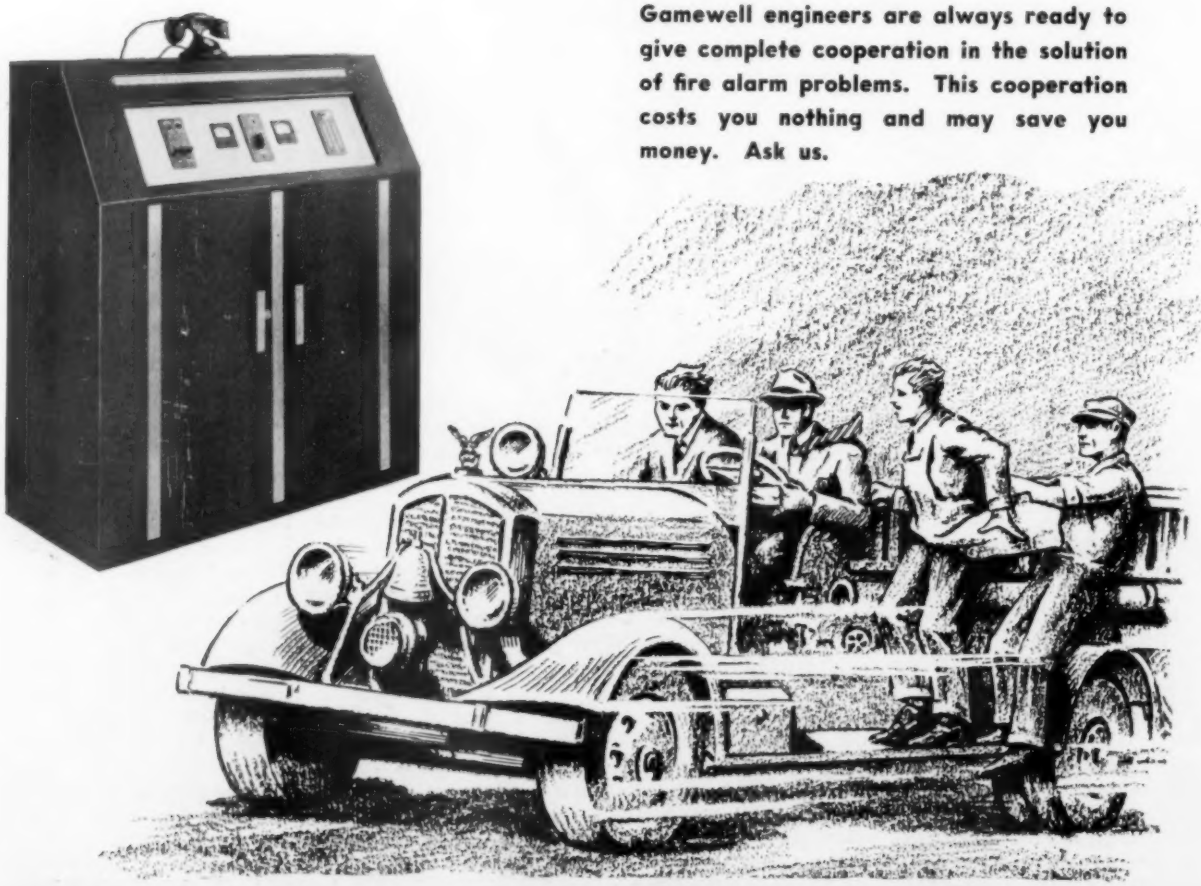
THIS system has proved itself most effective and economical in communities having volunteer fire departments or whose fire alarm requirements call for one alarm box circuit which can be divided into two sections . . . or loop circuits.

The element of maintenance cost has been practically eliminated in the VITAGUARD System and there's nothing about it that needs manual control or winding.

EXPRESSLY FOR VOLUNTEER FIRE DEPARTMENTS AND INDUSTRIAL PLANTS

If your community wants a dependable, low-cost fire alarm system send to Gamewell for the VITAGUARD book . . . it is fully illustrated and gives plenty of installation data.

Gamewell engineers are always ready to give complete cooperation in the solution of fire alarm problems. This cooperation costs you nothing and may save you money. Ask us.



THE GAMEWELL COMPANY

NEWTON UPPER FALLS MASSACHUSETTS

Public Safety

Yonkers Keeps Fire Department Well Equipped

THE YONKERS FIRE DEPARTMENT is now most adequately equipped with up-to-date apparatus, all purchased from bond issues. After we have hastily listed four 1,000-gallon pumping engines, a rescue truck, and an 85-foot aerial, we can point with pride to three 1,000-gallon pumpers (1936-37), four combinations with boosters (1938), two 1,500-gallon pumping engines (1939), a rescue-hose truck (1939), and three hook and ladder trucks (1935-37-38). The apparatus is 100 per cent American-LaFrance.

DANIEL CARNEGIE,
Chief, Department of Public Safety,
Yonkers, N. Y.

Frequent Mention of Automatic Sprinklers

CERTAIN PROVISIONS FOR FIRE PROTECTION are embodied in nearly all building codes. The frequent mention of automatic sprinklers is an indication of the high esteem this type of protection has earned. A modern automatic sprinkler system not only discovers the location of the fire but douses the blaze with water at its incipiency. A protective signaling system of the central-station type provides supervision over such a system and gives an alarm as soon as water starts to flow; it can also be used to warn of closed gate-valves, high and low water pressure, including low water in tanks, and freezing temperatures, making the protection as nearly automatic as possible. Because of their record as a means of protecting life, the installation of automatic sprinklers has been generally accepted in many industries.

Basement fires are frequently stubborn, smoky and difficult to reach and probably cause more casualties to firemen than any other type of fire. Even partial sprinkler installations, which cover only the basement or the principal hazard of a building, have proved to be of great value. Some years ago the city of Los Angeles enacted a basement sprinkler ordinance, which was made to apply to existing structures as well as those subsequently built. Since this law was carried out, no fire in a Los Angeles basement thus protected has ever developed beyond control of the sprinklers.

Life-Guard Cars of Los Angeles

THE DEPARTMENT OF PLAYGROUNDS and recreation of Los Angeles operates at its beaches one Dodge and two Chevrolet fast pick-up trucks equipped with H-H inhalator, stretchers, pier net, siren, red light and searchlight, rescue tubes, torpedo floating cans, 800 feet of rope, first-aid kit, and an Hawaiian hollow 14-foot paddle board, says C. P. L. Nichols, Supervisor of Aquatics, Los Angeles, Calif.

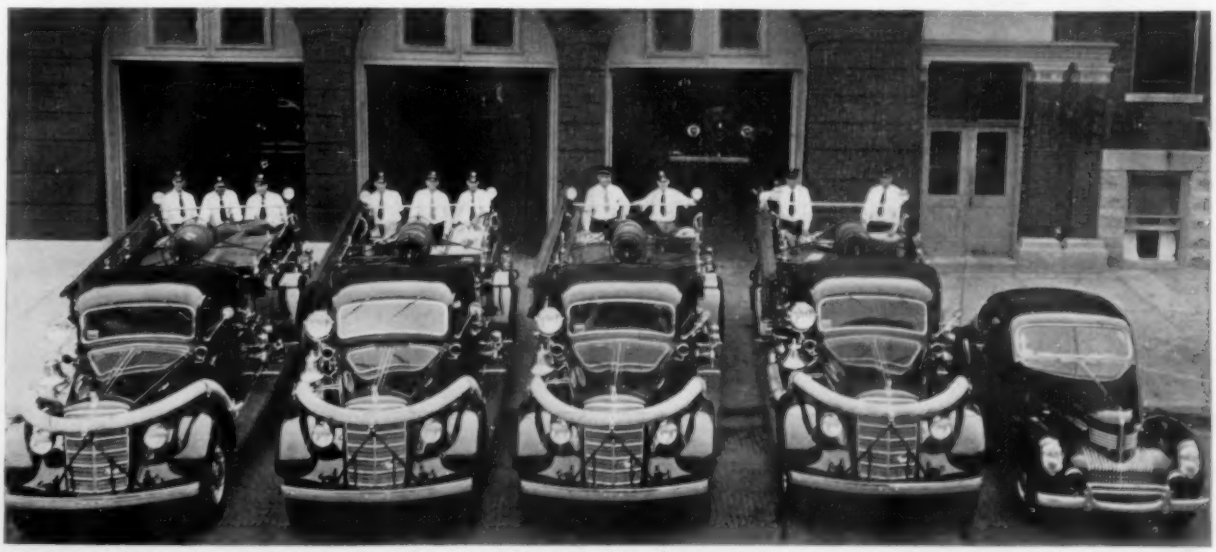
Modern Apparatus Goes to Joplin Fires

EXCEPT FOR TWO PUMPING ENGINES in headquarters station No. 1, all our apparatus was purchased in 1939. At station No. 1 there are two Mack pumpers — a 750-gallon hose and booster, and a 500-gallon hose, booster and salvage truck. There is also a 100-foot all-metal Pirsch aerial.

Station No. 2, completely rebuilt in 1939, contains a 750-gallon Mack pumping engine, as does also Station No. 3. This station is to be replaced at a better location with a modern fire station now under construction.

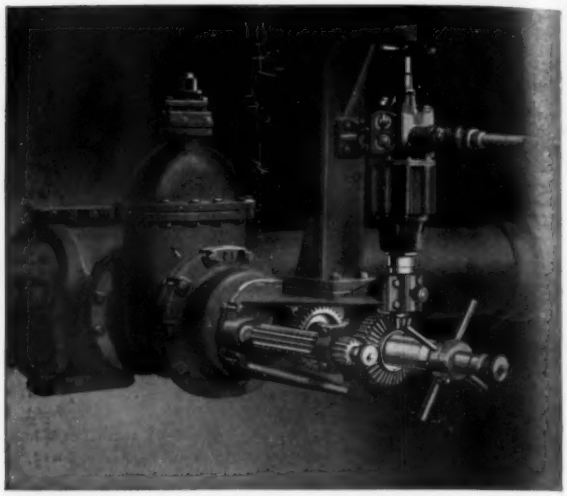
Our policy is to give aid freely to any accessible community needing it. The Department personnel makes regular inspections and conducts fire prevention work in schools and clubs.

J. B. JONES,
Chief, Fire Department, Joplin, Mo.



Joplin's Modern Fire Fighters

SMITH TAPPING MACHINES



The Smith Tapping Machine for making branch connections to water and gas mains under pressure is the most reliable machine for the purpose made—as well as the simplest, lightest, strongest, most economical and most easily handled.

Sizes are available for making taps all the way from 2″ to 42″. We rent the larger machines, supplying a foreman to superintend their use. The smaller sizes are sold or rented. The machines can be furnished with air motor, if desired. If you wish to purchase your own air motor, tell us what make and size, and we will fit your Smith Tapping Machine with an adapter.

Write for Bulletin 37-M on SMITH Tapping and Inserting Machines and Accessories.

Smith Tapping Sleeves and **Valves** of various types and sizes are kept in stock for your convenience. Class and thickness of pipe vary; pressures may be extremely high; steel pipe may be out of round. Whatever conditions you may have, tell us and we will recommend and quickly ship the correct sleeve and valve to solve your particular problem.

Make your plans to attend the 60th Annual Meeting of the American Water Works Association, Kansas City, Mo., the week of April 21, 1940.

Showing a 24" valve installed horizontally under pressure

Other Booklets:

32 VN—Valves and Hydrants

37 MF—Federal Meters

Smith Valve Inserting Machines make it economically possible, without danger, to insert new valves right into water or gas pipe lines while they are furnishing service, without in the least interfering with the supply or inconveniencing users. These machines are furnished in five sizes, for making insertions under pressure from 4″ to 30″.

SMITH VALVE INSERTING

THE A. P. SMITH MFG. CO., EAST ORANGE, N. J.

7 So. Dearborn St. Chicago, Ill. | 901 Wm. Oliver Bldg. Atlanta, Ga. | 524½ First Ave., So. Seattle, Wash. | 2416 Montana St. El Paso, Texas | 2799 Piedmont Ave. Berkeley, Calif. | 315 N. Crescent St. Flandreau, S. D.

Vol. LV, No. 4 The American City APRIL, 1940

Water Conservation Program on a Vast Scale

New York City Fights a Water Shortage with Publicity, Inspections, Cooperation

WHAT is probably the largest program of water conservation ever attempted is now in progress in New York City. On March 6, 1940, Commissioner Joseph Goodman of the Department of Water Supply, Gas and Electricity announced that the contents of the Catskill and Croton reservoirs, including Kensico, amounted only to 108 billion gallons of water, an amount sufficient to supply the present reduced average daily demand for water from these sources for only four months. The present available supply is six billion gallons less than the minimum contents during the 1930-31 drought, which was one of the most severe experienced in the East. When the reservoirs are full, they hold about 284 billion dollars.

The cause of the present shortage of water is the severe drought of last year, and the ever increasing demand, which had, in 1939, virtually reached the total dependable supply of water available from all sources in New York City. The dependable supply is the amount that can be made continuously available through a drought period. The East is now passing through a drought period, the severity of which cannot be predetermined. Hence the necessity for conserving the supply, to prevent a possible water famine.

Publicity

To meet the present emergency, the Department of Water Supply, Gas and Electricity is carrying out a four-point immediate program in its water-conservation campaign. It has used every available method to inform the public of the current water shortage and the potential water famine. The keynote of the campaign is emphasized by the slogan, "We do not ask you to stop using water, we ask you to stop wasting it." This theme is carried out in press releases, pamphlets, features, and wherever possible. With it is coupled the slogan, "Use Water Wisely."

All *metropolitan dailies,* along with the *foreign language newspapers,* have published many news and editorial items, special features and articles as well as cartoons. *Current Events,* the national school newspaper, has also carried a series of special articles on this subject, and the local technical press has also published news and feature articles.

Several talks have been broadcast over *municipal radio Station WNYC* and *Station WOR* and other hookups, by Lucile L. Kraft,

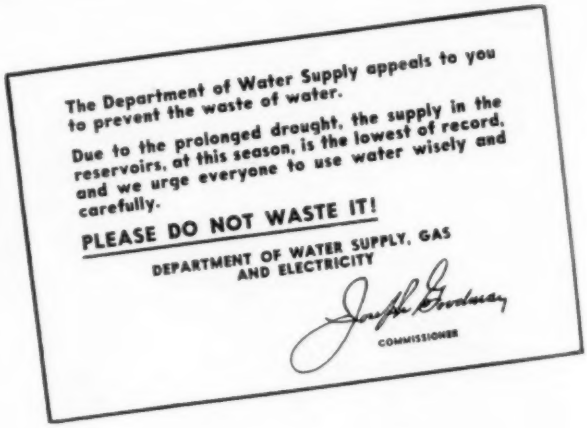
WATER SHORTAGE SUGGESTIONS.
By Rube Goldberg.
REDUCE SIZE OF BATHTUBS
DAILY
TAKE A SATURDAY NIGHT VACUUM
WEAR NEWSPAPER-UNDERWEAR-NO LAUNDRY
THIS IS THREE-SIXTEENTHS OF AN INCH OVER THE LEGAL SIZE
SPECIAL DERBY-ATTACHMENT-TAKE HOME RAIN WATER FOR DISHES
APPOINT SOAP-BUBBLE INSPECTORS

Rube Goldberg, noted cartoonist, contributed this cartoon to New York's water conservation program in the February 19, 1940, New York Sun. Reproduced by permission

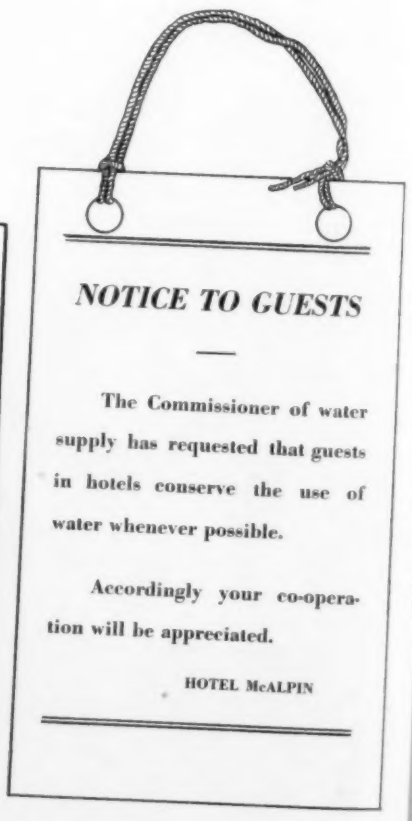
STOP THAT LEAK!
Water in N.Y. City reservoirs is unusually low. The Water Department urges everyone to repair all leaking fixtures and AVOID WASTE!
WASTE!
WASTE!
F. H. LaGuardia Mayor
Joseph Goodman Commissioner, Department of Water Supply, Gas and Electricity

POSTERS, NOTICES, FOLDERS Newspaper publicity shown on these pages and many other methods of carrying the message of conservation to New York City's millions are being used in its present campaign

DO NOT WASTE WATER!
SUPPLY IN RESERVOIRS AT THIS SEASON IS THE LOWEST OF RECORD
970,000,000 Gallons Used Daily
REPAIR ALL LEAKING FIXTURES
CONSERVE YOUR WATER SUPPLY
PLEASE COOPERATE
F. H. LaGUARDIA, Mayor
DEPARTMENT OF WATER SUPPLY, GAS & ELECTRICITY
Joseph Goodman, Commissioner


The Department of Water Supply appeals to you to prevent the waste of water.
Due to the prolonged drought, the supply in the reservoirs, at this season, is the lowest of record, and we urge everyone to use water wisely and carefully.
PLEASE DO NOT WASTE IT!
DEPARTMENT OF WATER SUPPLY, GAS AND ELECTRICITY
COMMISSIONER

INTERBOROUGH RAPID TRANSIT COMPANY
OUR MEN KNOW THEIR JOBS
The Subway Sun
THE SAFEST RAILROAD IN THE WORLD
THOMAS E. MURRAY — Receiver
"Hey! Bank this! I'll need it next summer! The City's supply is low!"
SAVINGS
WATER
Here's how YOU can save water: Don't leave faucets running—Avoid waste when shaving, washing dishes or using water for other purposes—
F. H. LaGuardia, Mayor
Joe Goodman — Commissioner of Water Supply, Gas & Electricity


NOTICE TO GUESTS
The Commissioner of water supply has requested that guests in hotels conserve the use of water whenever possible.
Accordingly your co-operation will be appreciated.
HOTEL McALPIN

CITY OF NEW YORK
DEPARTMENT OF WATER SUPPLY,
GAS & ELECTRICITY

USE WATER WISELY
AND CAREFULLY
DO NOT WASTE IT!

The water that flows from your faucets is brought to you at great expense.

Every effort is made to keep the water of the highest sanitary quality.

It is your water supply. You pay for it. Why waste any of it?

If a plumbing fixture in your apartment is defective and you cannot repair it yourself, notify the superintendent or landlord. If he will not repair it at once, notify the Department.

To report water waste, telephone:—

MANHATTAN — WORTH 2-4320
MUNICIPAL BUILDING

BRONX — TREMONT 8-8400
TREMONT & ARTHUR AVENUES

BROOKLYN — TRIANGLE 5-7100
MUNICIPAL BUILDING

QUEENS — STILLWELL 4-7150
ANABLE AVENUE, LONG ISLAND CITY

RICHMOND — ST. GEORGE 7-0840
BOROUGH HALL, ST. GEORGE

CONSERVE YOUR WATER SUPPLY!

DO NOT WASTE IT!

A MERE DRIBBLE FROM A LEAKING FAUCET WILL WASTE MORE WATER IN 24 HOURS THAN IS ACTUALLY USED BY THE AVERAGE PERSON.

ON THE LAST HOUSE-TO-HOUSE INSPECTION OF PLUMBING FIXTURES IN UNMETERED PREMISES, 400,000 LEAKING FAUCETS, TOILETS AND OTHER FIXTURES WERE FOUND.

STOP THE LEAKS!

JOSEPH GOODMAN
Commissioner

Outside and Inside of Folder

from New York Sun Mar. 6, 1940

40

WATER SUPPLY R… AT RECORD LOW H…

108,000,000,000 Gallons Ya… in Three Reservoirs.

STORM'S YIELD STILL TO COME FE…

30,000,000,000 Gallons Due Wo… When Snow Thaws.

The Catskill, Croton and Kensico reservoirs—with 108,000,000,000 gallons—were down to a level today below the all-time low established in the drought of 1930-1931 when the water system held 6,000,000,000 more gallons.

In announcing today's level Commissioner Jo… Department and Electricity previous dro… most severe watersheds.

During the … 000,000,000 … water, some o… ground today … square-mile w… into the Schol… and Kensico …pected that a … water would … city mains. … cent may be …

17 Inches …

A ray of h… report today …

from N.Y. Times Jan. 17, 1940

WATER OF THE CITY GUARDED BY A DITTY

Leader Asks Usc All to Think Before We Flood That Wasteful Sink

The city's current water shortage developed a lyrical twist yesterday when Mrs. Lucile L. Kraft, secretary of the Department of Water Supply, Gas and Electricity, secured a four-stanza injunction against water waste over WNYC. The Water was made for our delight
To serve us well both day and night,
For men athirst in barren places
For grubby hands and grimy faces,
Don't waste it!

Water is life for man and beast,
Yet of all blessings prized the least.
Though blood is thick and water thin,
It's water that we wallow in!
Don't waste it!

In course of time a dripping tap
Can drain a river off the map.
And Monday's water poured unheeded
On Tuesday may be sorely needed.
Don't waste it!

Unthrifty user, pause to think
Before you flood the wasteful sink,
This water lightly thrown away
May serve you well another day.
Don't waste it!

Mrs. Kraft did not identify the author, but said the verse was sent to the Mayor's office a few days ago and had been successfully used in another city during a water shortage. She cautioned mothers to go easy on the water, whether they were washing dishes, spinach or …

from New York Herald-Tribune Feb. 26, 1940

16

Mrs. Kraft Inspires Housewives To Save in Water Consumption

She Does So Well That Drain on Reservoirs Is Down 75 Million Gallons Daily

By Emma Bugbee

Mrs. Lucile L. Kraft is the woman who has made New York water-conscious. As secretary to the Department of Water Supply, Gas and Electricity, she has had charge of the campaign, originating in the office of Commissioner Joseph Goodman, which during these recent dry months has instilled into the minds of the city's housewives the lessons of water conservation. She has succeeded so well that the consumption of water has averaged for the last month 75,000,000 gallons a day less than the consumption for Feb., 1939, a year when the average total daily consumption was 965,000,000 gallons.

"I was as surprised as any one when the Commissioner announced that I was to direct the water conservation campaign among the housewives," Mrs. Kraft said, recalling Washington's Birthday by lunching uptown instead of at her desk in the Municipal Building.

"What the Commissioner and the Mayor wanted was some one with a layman's point of view, who could translate the engineers' statistics into terms the average housewife would remember. So I prepared a series of pamphlets and subway posters, all the things one does in any publicity campaign. We had radio and television, motion pictures and news releases, talks to school children. Everywhere we voiced the slogan 'Conserve your water supply —Do not waste it.' We tried not to frighten people—not to permit them to think they could not continue their normal use of water.

Received Funny Letters

"Of course, we received some rather funny letters. There was the person who wrote triumphantly that he had discovered it took less water for a shower bath than for a tub, and the woman who wrote to tell

© Maclaret Kendlers
Mrs. Lucile L. Kraft

her of the executive committee of the National Progressive party sup…

WATER IS OUR PRICELESS GIFT

CONSERVE IT

Facts

The demand for water from the Municipal Water Supply System averaged 965,000,000 gallons a day throughout 1939, taxing reserves to the utmost.

The present demand for water is dangerously close to the total supply that can be obtained from the entire Municipal System during the dry periods like those we are now experiencing.

Our storage reservoirs are almost two-thirds depleted.

Water from the Delaware System, now being developed, will not become available until 1945.

At the present rate of consumption, our supply will not suffice to meet the needs of the growing city up to 1945—even with normal rainfall—unless you, as a member of the water-consuming public, will help to conserve your own water supply.

Today a considerable proportion of the water delivered to the City is wasted. Most of this waste can be eliminated by your cooperation.

Here Is How You Can Help

By turning off faucets as soon as sufficient water has been drawn for your immediate needs.

By not wasting gallons when only a glassful is required.

By not flushing toilets to wash sweepings into the sewer. One flush uses six gallons of water.

By not wasting water to prevent freezing of pipes. Exposed pipes should be protected by covering with insulating material.

By observing departmental rules regarding the use of hose.

By promptly attending to leaking faucets, toilets and other plumbing fixtures.

By reducing waste from leaky plumbing fixtures, by keeping on the alert against unnecessary use of water, the demand can be cut down—so that there should be an ample supply of water for all legitimate purposes up until 1945.

REMEMBER, IT IS UP TO YOU TO HELP CONSERVE THE SUPPLY BY

NOT WASTING WATER

Secretary to the Department. To supplement these regular addresses and messages on the need for conservation, radio stations have cooperated by constantly presenting brief "spot" announcements, dramatizing the emergency and emphasizing it through constant repetition on the warning, "Do Not Waste Water." Special appeals have been made to housewives over the radio, and the foreign language radio stations in the metropolitan area are also cooperating.

Short *news reels* depicting the depleted condition of the reservoirs and showing Mayor LaGuardia conferring with Commissioner Goodman, and also illustrating several ways in which water may be saved by the average householder, have been shown for one full week in every neighborhood theater throughout the metropolitan area. They conclude with a final word from the Mayor urging all citizens to cooperate in the conservation program.

With the cooperation of the National Broadcasting System, the *radio television* feature was simultaneously televised and broadcast over stations W2XBS and WJZ. On this program there was a round-table discussion with illustrations on the need for water conservation, by Joseph Goodman, Commissioner of the Department; Edward Nuebling, Division Engineer, and Henry B. Machen, Borough Engineer.

The *subway and elevated railway systems* have displayed "Stop That Leak" posters urging everyone to repair all leaking fixtures and avoid waste. These were so effective that they were reprinted, and over 25,000 posters were distributed to hotels, restaurants, banks, retail markets, chain stores, real estate management companies, laundries, civic organizations, public meeting places, and wherever citizens gather. A second poster has now been placed in circulation. *Hotels* have cooperated by having appropriate notices printed and posted in guest rooms, elevators and other conspicuous places in the hotels.

A large billboard, 20 x 35 feet, located in the heart of the city at 43d Street and Broadway, has been used for an effective painted poster sign in color. This is the first of a series of similar painted signs or possibly billboard posters throughout the city, which will be used to intensify the campaign as needed.

More than two million "Conserve Your Water Supply" *pamphlets* were prepared and distributed to all public and private schools, institutions, business and civic organizations, clubs and settlement houses throughout the city. The City Collector's office sent out over 300,000 of these pamphlets with their real estate tax and other bills.

All real estate management concerns, the Hotel Association of New York City, Inc., Boy Scout Troops, hospitals and many other associations sent *special bulletins* or included notices in their regular bulletins to their entire membership urging that full cooperation be given the Department of Water Supply in its "Do Not Waste Water" campaign.

Discussions on water shortage were held in *civic classes in the city schools*—public, parochial, and private, elementary, high and evening extension. Children especially were urged to take pamphlets home and call the attention of their parents to the seriousness of the water shortage. The Department is now contemplating sponsoring a city-wide essay contest in the public schools on the subject, "How We Can Help to Conserve Water."

All city departments were asked to cooperate, and they promptly posted notices to their employees on their bulletin boards, remedied leaking fixtures on their premises, and in some instances found waste which was immediately reported for attention. There were special conferences with those departments requiring large volumes of water in keeping with the functions of their particular departments.

"We do not ask you to stop using water, we ask you to stop wasting it."

Personal Contact

Many influential organizations have been enlisted in the campaign by telephone, mail, personal calls and letter. "How to Save Water" information was supplied to civic and women's clubs, labor unions, trade associations, chambers of commerce, engineering societies and organizations of the foreign-born, and many other large membership groups.

Inspections Intensified

The Department of Water Supply has a force of employees searching for leaks that are constantly developing in the 5,000 miles of water mains and 640,000 service pipes under the city streets. Each year during the past ten years leaks of various sizes aggregating 30 million gallons a day have been stopped. To augment the regular inspection force, a small force of inspectors furnished to the Department by the NYA, and under the supervision of civil employees of the Department, is engaged in a house-to-house survey to detect and enforce the repair of leaking plumbing fixtures in buildings.

Inspection is also being made by the Department forces of all refrigeration machines and all air-conditioning apparatus where the water is not being recirculated, as there is a marked tendency for large waste in this type of equipment. With additional inspection forces as well as the increased and intensified inspections made by the Department's force to locate subsurface leaks and to detect and suppress leaking fixtures in buildings, more positive results in the reduction of consumption by elimination of waste can be expected.

The Department is negotiating for Federal aid in establishing a project to conduct house-to-house inspections, which must be repeated periodically and must cover the city at least once in two years to secure a permanent benefit, since new leaks are developing continuously. The last such WPA project continued from 1934 to 1937, during which time 473,000 buildings were inspected, revealing over 400,000 leaks, and it was estimated that a reduction in consumption of 40 mgd was effected.

City's Own Efforts at Saving

The Department of Sanitation

has given up the use of hand hoses for flushing to remove snow and break up ice blocks on the streets. While this method has always proved very successful in quickly clearing the streets of ice and snow, it has been absolutely necessary that it be omitted this year because of the low condition of the city reservoirs. This Department is also using water pumped from the Hudson River, using Fire Department equipment as well as portable gasoline pump units to furnish the five million gallons a day required for street flushing. The contents of each flusher are sterilized with chlorine by adding a calcium hyperchloride solution to the tanks of the flushers as they are being filled, to maintain a residual chlorine content of 20 to 25 ppm. To advertise this conservation feature, the flushers have had the following sign lettered on the sides of the tanks: "There is a Shortage of City Water —Please Do Not Waste It! This Flusher Is Using Chlorinated River Water." The Commissioner of Water is now conferring with the Department of Parks on steps to be taken for economizing during the coming season on the use of water by that Department in parks and playgrounds, for display fountains, drinking fountains, wading pools, open-air swimming pools, and lawn sprinklers.

It is estimated that more than 200 mgd is now being lost in leaks of water fixtures and underground pipes. A large part of this waste cannot be stopped by any practical method of waste control. By reducing the pressure in the pipes, the amount of leakage can be decreased. This method of reducing consumption, however, will be employed on a large scale only if it should become necessary to avoid emptying the reservoirs completely. It is estimated that the conservation measures outlined above, when in full swing, will reduce the demand for water in the city by 80 mgd.

Results of Campaign

Suggestions, good, bad and indifferent, have poured into the Department by wire, mail and telephone from many diverse sources, both individual and organizational. Conditions of existing waste and leakage have been reported and promptly investigated and remedied. Many offers of cooperation have been received from quarters not previously heard from. The entire educational campaign has received splendid cooperation and a most gratifying response from the city's residents.

USE WATER WISELY

The average daily consumption and the resulting savings since the campaign started are shown in the following table:

AVERAGE DAILY CONSUMPTION IN MILLIONS OF GALLONS

	1938	1939	Difference
July	954.9	985.3	+30.4
August	1005.9	1004.6	— 1.3
September	921.5	942.4	+20.9
October	906.7	935.8	+29.1
*November	903.7	904.5	+ 0.8
December	917.2	886.2	—31.0
	1939	1940	
January	915.0	887.6	—28.2
February	922.7	839.6	—83.1
**March	918.0	843.0	—75.0

* The publicity campaign for the conservation of water supply started in November, 1938.
** Estimated.

Not all these savings, however, can be attributed to more careful use of water and conservation by the public. Last year a substantial amount, estimated at 25 mgd, was used for snow removal and street flushing, which was not permitted this year. It would appear that the present emergency has not been without its compensation. It has made over seven million citizens aware of the fact that water is a priceless gift and that they must conserve it. The people of New York City have responded with wholehearted cooperation to all suggestions and constructive measures publicized by the Department of Water Supply, Gas and Electricity.

Universal metering has been suggested to alleviate the water shortage, but no immediate relief from present conditions in New York City can be attained by this means since it would take three to four years to fully meter the city, assuming that the necessary enabling legislation could be obtained.

We are indebted to Lucile L. Kraft, Secretary to the Department of Water Supply, Gas and Electricity, who is responsible for, and is directing, the water-conservation publicity campaign, for the information and many of the illustrations used with this article. We wish also to acknowledge the kind permission of Rube Goldberg to use his cartoon "Water Shortage Suggestions," which originally appeared in the February 19, 1940, issue of *The New York Sun*.

Facts, Opinions, Recommendations on Philadelphia Water Supply

THE Committee on Water Supply of the Better Philadelphia Committee has been studying the present water supply of Philadelphia, Pa., for some time and has prepared a report which has been transmitted to the Mayor and the President of the City Council of Philadelphia. The Better Philadelphia Committee is a group of civic-minded Philadelphians interested in the improvement of the city, which they are endeavoring to accomplish through the medium of informed public opinion. The members of the Committee on Water Supply are Dr. William C. Beyer, Director of the Philadelphia Bureau of Municipal Research, R. H. Lansburgh, Director of the Philadelphia Committee, Pennsylvania Economy League, and Charles Haydock, Consulting Engineer, Chairman.

In its progress report the Committee states certain facts and opinions, and makes certain recommendations which are of vital importance to the city of Philadelphia and of general interest to municipal and water-works officials everywhere. The facts which it brings out are:

1. The city of Philadelphia has an ample supply of raw water available from the present highly polluted Schuylkill and Delaware River sources.

2. The water supplied to the public is generally safe from a bacteriological standpoint, although not always satisfactory as to taste, odor and appearance.

(*Continued on page 101*)

New Refuse Incinerator at Austin, Texas

The 150-Ton Plant Has Garage with Truck Service

By GUITON MORGAN
City Manager, Austin, Texas

ADEQUATE refuse disposal is an essential municipal service to preserve the appearance and health of the community. An obsolete and inadequate incinerator of 40 tons daily capacity supplemented by rural dumping areas constituted the disposal facilities of Austin until the summer of 1939. In July a new incinerator with a daily capacity of 150 tons was placed in operation. The plant was designed by the engineering staff of the city and was constructed as a PWA project. In addition to the incinerator proper, the completed construction includes a scale house, and office and garage storage space for the collection trucks, complete with washing, greasing and service facilities for all trucks, sweepers and motor equipment.

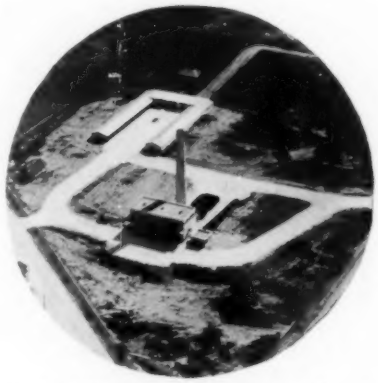
The location is in a fairly isolated section, only 2¼ miles from the center of gravity of haul for the entire city. All unpaved sections of streets to be used by collection trucks as routes to and from the incinerator were paved, and no protests have been received from surrounding property areas. Owing to the irregular terrain at the plant, it will be possible to dump unburnable residue for several years to come.

The Building

The building is of modern design, of reinforced concrete and brick construction. All the brick, except stack materials, were salvaged from the old central fire station which was torn down in 1938 when a new central station was built. The costs of the completed plant were as follows:

Incinerator proper	$144,211.12
Garages and service equipment	10,000.00
Land and fencing	7,491.85
Engineering and construction supervision	4,009.52
Total	$165,712.49

A grant of $74,570.62 was obtained from the PWA, and city funds amounting to $91,141.87 were available, hence no bond issue was required.



Airplane View Showing Layout and Garage

Furnaces

Two identical units of 75 tons daily capacity each are included in the single building, each unit consisting of a 75-ton storage bin, three charging hoppers, one furnace and drying hearth, three grates, three ash hoppers and a preheater. The overhead crane for charging, the combustion chamber and the stack serve both units.

The plant is located on a sloping site which was built up by ramps to the top of the storage bin. Ramps down on the opposite side come to the level of the ash floor. All material is thereby handled by gravity, from the dumping of the collection truck to the loading of the ash-removal trucks, except for the one lift by the grab-bucket from the bins to the loading hoppers.

By building the plant in two separate units it is possible to shut down one for repairs and for washing and sterilizing, without stopping the plant operation. All refuse is weighed on a 10-ton scale which automatically registers and records the loaded-truck weights.

Design Affecting Operation

The details of construction affecting operation were given much attention in designing the plant. The charging hoppers are built with the top approximately 3½ feet above the charging floor to eliminate hazards and the possibility of operators' falling into the furnaces. The charging gates slide in a horizontal plane below the hoppers and are hydraulically operated. The ash discharge gates are of similar design. A 2-cubic-yard charge of garbage and refuse is delivered from the loading hopper at one opening of a gate and is dropped on the drying hearths, where the material is dried before being consumed in the furnace. Temperatures from 1600 degrees to 2600 degrees F. are obtained in the furnaces and combustion chamber. Manually operated cast iron grates discharge the ashes into the ash hoppers, where they are cooled by water sprays before being discharged into the trucks below.

The flue gases pass from the furnaces over bridge walls into the combustion chamber, then around preheater tubes through the stack breeching and into the stack. The furnace tops are of flat-arch construction with refractories supported by steel framework. The wall refractories are lined on the exterior with sheet steel plates and I-beam sections supporting the framework. Individual refractory blocks can be replaced without replacing the entire arch.

The preheaters are of the refractory type equipped with core-busters. The air for preheating is drawn through a system of ducts from the upper portion of each floor and from areas over the furnace, thus removing odors and increas-

ing ventilation throughout the structure. No auxiliary fuel is used, since the fuel value of the mixed refuse and garbage, with the preheated air discharged into the furnaces below the grates at 400 to 500 degrees F., is sufficient to support combustion. The capacity of the blowers in the preheated air system is 8,000 cubic feet per minute per furnace.

Above each of the three sections of the two furnaces on the stoking floor are signal lights corresponding to duplicate lights above each section of the hoppers on the charging floor. By means of these lights the stoker notifies the crane operator and the chargers that a unit of the furnace is ready for another charge of refuse. There is also a complete telephone system within the building among all divisions of the plant, the scale house and the office.

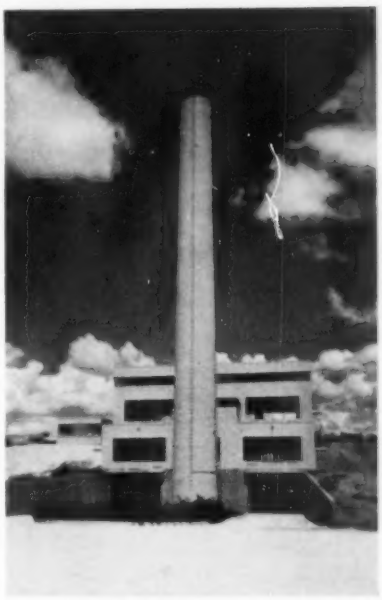
The Stack

The stack consists of an outer wall of radial tile and is approximately 15 feet in diameter at the base and 8 feet in diameter at the top. An inner wall of fire-brick rises the full height of the stack and is separated from the outer wall by an annular air space. This air space is connected with ventilating holes at the base and top of the stack. A target wall 40 feet high is constructed against the inner face of the inside wall as an abrasion- and heat-resisting liner in the lower portion of the stack, where the temperatures are the highest. Both outer and inner walls of the stack are reinforced with circular metal bands.

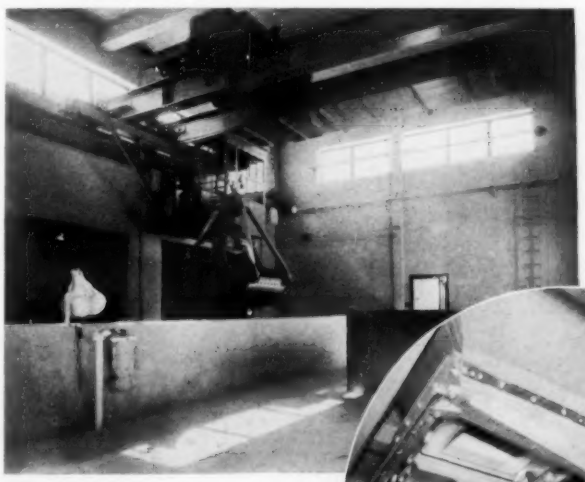
Service Buildings and Garage

Located to one side and at the rear of the incinerator is a service building and storage garage for all the collection trucks. The galvanized iron structure, seen in the air view, is built in the shape of a "U" and has garage space on each side, with the repair shops built in the end section. Here the trucks are washed, sterilized and serviced each day. Adequate sanitary facilities in the locker rooms, including showers, are provided for the men.

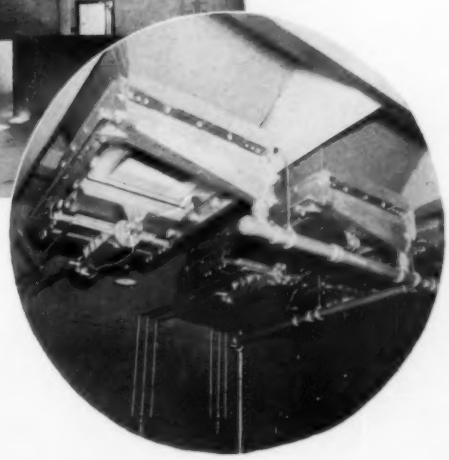
All power for the plant is electrical and all lines for light, power and telephones are underground. Safety devices at the plant include a danger siren operated from the scale house, and explosion-type furnace doors. The operating personnel for each shift consists of one crane operator, one office and scale operator, two stokers, two chargers, two clean-up men and one ash man.



Rear View of the Incinerator, Showing the Tunnel for Loading Ashes



At Left—the Crane and a Charging Hopper. Note the Floodlight for the Storage Pit and Fire Hose for Protection



At Right—the Hydraulically Operated Gates for the Ash Hoppers

Public Spending for Roads and Slum Clearance

OUR government has always had a spending program. And it always will.

But it will be observed, concerning those earlier spending programs, that they were shrewdly calculated *to help us* make a profit. The money spent on roads, for example, has returned to us many times over, because it helped the automobile industry to grow, and with it the rubber industry and the oil industry and a hundred-and-one other industries in which millions of us earn our living. Spending need not be harmful to our system. It may be, and in the past has been, of enormous benefit to every one of us. . . .

A businesslike administration . . . would have to consider each spending project—except those of a genuinely emergency nature—in the light of an *investment* for us, the people. The government will not always be able to find such good investments as the roads have turned out to be; and sometime, in the very nature of its trust, the returns on its investments must be intangible returns—as in the case of hospitals, for example. Yet good economic investments can be found. Slum clearance, for instance, should be carried much further than it has been. Slum clearance raises the standard of living of the families involved. It therefore raises property values and helps business in the surrounding areas.

—From "We, the People: A Foundation for a Political Platform for Recovery," by Wendell L. Willkie, in *Fortune* for April, 1940.

Zeolite Water Softening at East Lansing, Mich.

Heavy Load on First Plant Built in 1933 Led to Construction of New Plant in 1939

By Raymond J. Faust
Assistant Engineer, Bureau of Engineering, Michigan Department of Health

THE water supply of East Lansing is obtained from wells terminating in sandstone. The bacterial quality of the water is safe, but the chemical content is such that the total hardness, 320 ppm as $CaCo_3$, and the iron content, 1 ppm as Fe, have proved objectionable. Many homes were equipped with cisterns and zeolite softening units, but these methods proved unsatisfactory. Agitation developed for the construction of a municipal water-conditioning plant and resulted in a bond issue voted in the spring of 1933 for this purpose. The total cost of the conditioning plant approximated $21,000. The Public Works Administration contributed 35 per cent and the city 65 per cent, thus making the city's share about $14,000.

The plant was designed for a capacity of one million gallons per day and consisted of five Permutit zeolite softening units and two iron-removal units, all automatically operated by means of an electric sequence-time-switch operating multi-port valves on each unit. A 350-foot well equipped with a Byron Jackson deep-well turbine pump with a setting of 170 feet and a capacity of a million gallons per day was located back of the softening unit and 170 feet below ground, so that the supply and treatment equipment would all be under one roof. The equipment is located in a building designed to match the architecture of the residential area in which it is situated.

The units each contain 200 cubic feet of green-sand zeolite, with a bed depth of 5.19 feet. Each unit is 7 feet in diameter and 11 feet high. With an exchange capacity of 2,800 grains of hardness per cubic foot of zeolite, each unit has a capacity of 560,000 grains: thus approximately 31,000 gallons of East Lansing water can be softened and the iron removed between regenerations.

Zeolite has the ability to reduce the total hardness of water to zero. Water of this quality would be corrosive and expensive to use and therefore not desirable for public use. To meet this problem, a split treatment was adopted whereby approximately three-quarters of the supply is passed through the five zeolite units, where softening and iron removal are accomplished, and the remaining one-quarter of the supply is passed through the two manganese zeolite units for iron removal only. The treated water from both processes is again united and results in a water with a total hardness of between 80 and 90 ppm, and with an iron content below 0.2 ppm. The free carbon dioxide in the raw well water approximates 30 ppm. Softening removes the natural alkalinity of the water and destroys the chemical balance in respect to carbon dioxide and therefore yields a corrosive water. To eliminate the excessive Co_2 content and to raise the pH, caustic soda is applied to the treated water so that the pH is above 7.4

The Old Softening Plant at East Lansing, Showing the Type of Building to Harmonize with Residences in the Neighborhood

Typical operating data for the plant are listed below in a comparison between August, 1935, and August, 1939.

	August 1935	*August 1939*	*Unit*
Total raw water pumped into plant	12,370,000	22,200,000	gals.
Total conditioned water pumped from plant	10,890,000	18,870,000	gals.
Waste (washing and regenerating)	1,380,000	3,330,000	gals.
Waste as per cent of pumpage into plant	12%	15%	
Softened and iron removed through softener	8,710,000	16,250,000	gals.
Raw water treated for iron removal	2,180,000	2,620,000	gals.
Daily average pumped into plant	398,000	717,000	gals.
Daily average discharged from plant	351,000	610,000	gals.
Salt used per 1,000 grains hardness removed	0.388	0.45	lbs.
Salt used	58,700	118,000	lbs.
Potassium permanganate used to regenerate iron-removing zeolite	74	18	lbs.
Sodium hydroxide	120	1,540	lbs.
Sodium silicate	120	0	lbs.

These figures show at least three

significant facts: first, that the consumption of water at East Lansing has almost doubled during the past four years; second, that the water used for washing and regenerating the conditioning units has increased from 12 to 15 per cent of the water pumped into the plant; and, third, that the salt consumption for regeneration of the softening units has materially increased.

The need for additional conditioning equipment and water supply was apparent to the city officials, with the result that a $36,000 bond issue was voted on and approved by the people on October 1, 1938. The Public Works Administration contributed 45 per cent of the total cost of the project, making their contribution $28,454. The project included a 1,440,000-gallon-per-day automatic softening and iron-removal plant, a 14-inch-diameter well, 407 feet deep, equipped with a turbine pump, a 200,000-gallon elevated storage tank, and connecting water mains.

New Plant in Service

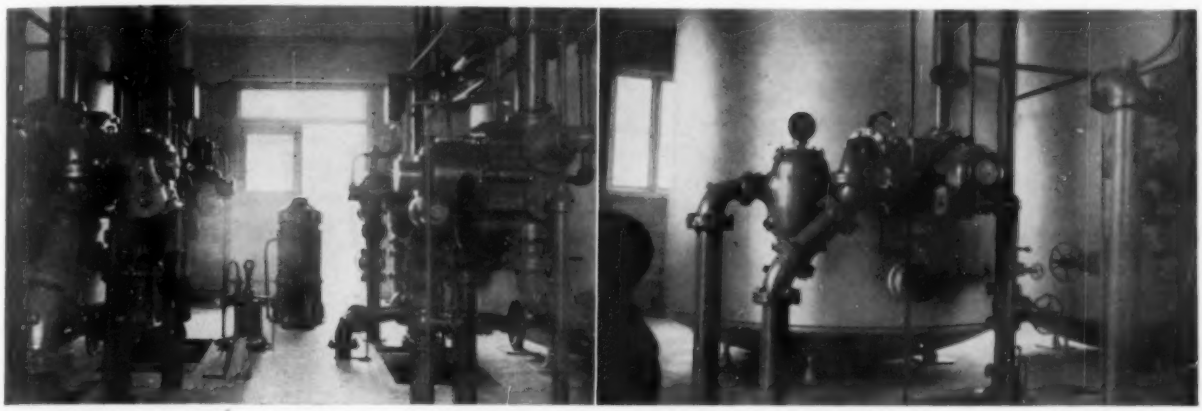
The new plant was placed in service November 1, 1939, and in general is similar to the original installation in design and operation. Features of interest are the high exchange capacity of the new zeolite and the automatic method for removing the air in the turbine pump and thereby preventing its reaching the filters and oxidizing the iron in the water before treatment.

The zeolite in the new Permutit plant is of the carbonaceous type. It has an exchange capacity of 8,000 grains of hardness per cubic foot of material and requires for regeneration not over 0.45 pounds of salt per 1,000 grains of hardness removed. Because of the high exchange rate of the zeolite, the number and area of softening units could be decreased materially from that used in the original plant. Three softening units 8 feet in diameter and 9 feet high were installed. The single iron-removal unit is 9 feet in diameter and 9 feet high.

To prevent surges of pressure in the water line between the pump and the softeners and to expel the air that accumulates in the line and pump due to intermittent operation, there is provided a delayed action switch for operating the hydraulic valve on the pump discharge. The delayed action switch is timed to permit the accumulation of air to be discharged to the atmosphere before the hydraulic valve starts to open. This operation prevents the oxidation of iron in the water first applied to the softening units and prevents the filters from becoming air-bound.

The specifications for the finished water require that the total hardness be reduced to between 58 and 68 ppm. and that the iron content average not more than 0.15 ppm. The hydrogen ion concentration of the treated water is not to be less than 7.6.

Although the new plant has been in service only a short time, there is every indication that it will meet all the specification requirements. The contract price for the softening, iron removal and pH control equipment installed was $24,497. The cost of the building in which it is located was $9,987, making the total plant cost $34,484.



Interior of the New East Lansing, Mich., Zeolite Water-Softening Plant, Showing, at Left, the Deep-Well Pump and Rotary Control Valves of the Two Batteries of Softeners, and, at Right, the 3-Inch Trident Crest Meter Which Starts the Regeneration Cycle When the Predetermined Quantity of Water Has Been Softened

New Restaurant for Zoological Park

THIS new restaurant, for which a Federal Works allotment of $90,000 has been made, will be built this year, to overlook the new swan lakes at the National Zoological Park in Washington, D. C. Modeled after the historic Virginia taverns, the exterior walls will be of rubble stone and the roof of clay-shingle tile.

The design originated in the office of the Supervising Architect of the Public Buildings Administration.

City Sewage and Trade Wastes Treated Separately

Effective Dual Chemical Treatment Plant Serves a Community of 8,000 Population and Its Industries

By ERVIN F. LEIST
Superintendent-Chemist, Circleville, Ohio, Sewage-Treatment Plant

THE city of Circleville, Ohio, is located about 26 miles south of Columbus, Ohio, on the east bank of the Scioto River. Its population of 7,049 in 1920 increased to 7,369 in 1930 and has shown a steady increase since that time. The principal industries of Circleville are two vegetable canneries, a broom factory, a milk plant, several small dairies, two soy-bean oil-extraction plants, a stock-feed manufacturing plant and a strawboard plant of the Container Corporation of America.

Circleville is the county-seat of Pickaway County and has an area of 1,500 acres, of which 1,100 are populated. The incorporated area is divided by Hargus Creek, which discharges into the Scioto, leaving a minor drainage area in the northern part of the city, with an estimated population of 1,350. The topography is flat, having a gentle slope to the southwest. The site for the sewage-treatment plant was chosen at a point in the southwest corner of the city on the bank of the river. The Scioto River at Circleville has a watershed of 3,217 square miles and a sustained flow of more than 200 cfs, therefore primary treatment of the sewage and wastes of the city has been provided to remedy objectionable conditions. Since the vegetable canning season is during the summer months, the organic load discharged to the river is the greatest when the flow of the river is usually the lowest.

The new primary treatment plant was completed and put into operation on May 15, 1939, and the following months of operation proved to be very timely owing to the exceedingly dry season and accompanying low river stages. From May 15 to December 31, 1939, inclusive, the city sewage handled at the plant amounted to 66,182,000 gallons. The daily average during the period was 291,500 gallons. The strawboard waste handled from September 25 to December 31 inclusive amounted to 125,646,000 gallons, with a daily average of 1,174,000 gallons. These figures show that the flow of wastes from the one strawboard plant is about four times the daily flow from all other sources combined.

A pumping station was constructed in the city below the surface of the ground just north of Hargus Creek, to lift the sewage from the area north of the creek across the creek and into the sanitary sewer system, from which point it flows by gravity to the plant. The station houses two Weinman 350-gpm centrifugal pumps, which are controlled by float switches and are protected by a bar screen.

The Main Control Building, of Two Floors and a Sub-basement, as Seen from the Entrance Drive to the Circleville, Ohio, Sewage-Treatment Plant

Sewage and Waste Separated

The plant is ideally located in an area isolated from the built-up section of the city and close to the strawboard plant. From the standpoint of topography, the site is also an excellent one, for there is a difference of 15 feet between the inlet and the outlet of the plant at the river's edge. The plant is of the chemical precipitation type and is designed to treat the city sewage and the strawboard waste separately. In reality there are two complete plants under the same roof. The controls and chemical feed equipment for both types of wastes are centrally located in the control building.

The portion of the plant designed to treat city sewage will handle an average flow of 1 mgd and is capable of treating a maximum flow of 2 mgd. The portion of the plant constructed to treat the strawboard waste was designed for an average flow of 1 mgd with a two-hour detention in the settling tanks. Since the plant was designed, the strawboard plant has done some remodeling and made changes in the process of paper manufacture so that the flow from the manufacturing plant has increased considerably over the estimated flow of the original survey.

However, steps are being taken to remedy the situation.

The degree of treatment provided is the minimum which will maintain the Scioto River in a satisfactory condition below Circleville. It is probable that at some future date, in order to increase the degree of treatment and thereby protect the river, secondary treatment may be provided.

The city sewage is collected by a common sewer just north of the plant, and a new 18-inch Transite line was laid from this main to a by-pass manhole at the sewage-treatment plant. A 14-inch Transite private sewer was constructed by the strawboard plant owners to carry the wastes from their plant to the by-pass manhole. At this point, either or both the sewage or the strawboard waste, or any portion of it, may be by-passed to the river. From the by-pass manhole the two lines parallel each other to the main control building of the treatment plant.

Treatment of City Sewage

Coarse materials are removed from the city sewage by means of a Rex mechanically cleaned bar screen, the screenings are ground in a Triturator and then returned to the sewage. The sewage flow is measured by a Simplex venturi meter, following which alum is fed to the sewage by W & T chemical dry feeders. To insure thorough mixing, the sewage and chemicals are run through Turbo-Mixer Corporation flash mixers and thence to Dorr flocculation tanks, where the slow stirring action increases the coagulation, so that the suspended solids settle more readily in the primary tanks. Each battery of two primary tanks, one battery for the city sewage and one for the strawboard waste, is preceded by flocculation tanks, each with a capacity of 11,300 gallons, or a total of 22,600 gallons per battery of flocculation tanks. The detention period in each tank is 32 minutes for a 1-mgd flow.

The flocculated sewage is discharged directly to the primary tanks, of which there are also two batteries, each divided into two separate settling tanks. Each has its own chain and flight sludge-collecting mechanism. Multiple weirs are provided at the outlet end, and grease troughs are located just ahead of the weirs. The grease is skimmed into these troughs, from which it is carried through a 6-inch line to a scum well. A cross-connection is made in the draw-off line from the primary tanks, so that the skimmings may be pumped to the digesters, or can be diverted to the strawboard sludge lagoon. Each compartment of the primary settling tanks has a capacity of 40,900 gallons, with a detention period of 2 hours and 20 minutes at a flow of 1 mgd. The final effluent from the primary settling tanks may be sterilized with chlorine at the outfall manhole by means of a W & T chlorinator.

The primary tank sludge is digested in two separate sludge-digestion tanks 35 feet in diameter with a capacity of 21,000 cubic feet each. They are equipped with PFT floating covers and heating coils. The gas-fired boilers for heating the water circulated through the coils are located in the main control building. The control room between the digesters houses the piping and valves, as well as the supernatant sampling basins and valves. The digesters are designed to be operated separately or as a two-stage system. Provision is also made to circulate the contents of the digesters by means of the Chain Belt sludge pumps in the main control building.

A concrete well located between the main control building and the digesters is used for storing definite quantities of sludge from the digesters. A Gould sludge pump, on the filter room floor, pumps the sludge from the well to the Oliver vacuum filter for dewatering. The dewatered sludge is disposed of on a dump close to the plant.

The gas collected from the digesters is used to fire the two American Gas Products boilers and also to supply the laboratory. The boilers can burn natural gas if there is not sufficient digester gas. In addition to the heated water circulated in the digesters, the main control building is heated by a hot-water system.

One Battery of Flocculators and Sedimentation Tanks

A drainage well was built to collect excess drainage water within the limits of the flood-protection dike around the plant during periods of high river water. The flow of treated wastes can be diverted from the regular outfall line to this well and discharged through a force main to the river. There are two 1,000-gpm Weinman vertical centrifugal pumps, equipped with automatic water-level controls, pumping from this well.

Treatment of Strawboard Waste

The treatment of the strawboard waste is the same as for the city waste, and with the same type of equipment except that no screen and grinder are necessary, owing to prior screening. The sludge from the waste is not put into the diges-

ters but instead is pumped from the sedimentation tank directly to a lagoon provided by the strawboard plant for settling and subsequent drying.

This waste presents a particular problem in treatment. On plant scale little has been accomplished to verify laboratory experiments in the development of a more economical and satisfactory method of treatment. Some of the laboratory tests gave effective results, but such treatment proved costly. Investigation during the brief period of operation has, to a degree, substantiated the work done by others, showing that the use of coagulants does not aid greatly in the reduction of suspended solids. Plain sedimentation shows a suspended solids reduction of 43 to 50 per cent and a B.O.D. reduction of 13 to 20 per cent. The sludge has a solids content of 2.7 to 4.0 per cent, and a volatile solids content varying between 52 and 53 per cent. The crude waste has a total solids content of 5,300 to 6,400 ppm, and the pH varies from 9.0 to 11.3.

The best results in reduction of B.O.D. have been attained with chlorination of the effluent from the primary tanks. The most effective dose ranges between 70 and 100 ppm of chlorine. A laboratory study of the effect of chlorine shows that dosages greater than 100 ppm are accompanied by a falling-off in the rate of B.O.D. reduction.

The raw strawboard waste is yellow-brown in color, and the process of sedimentation does not tend to reduce the color. The use of various coagulants does not aid in color reduction, and in some cases intensifies the color. Sulphuric acid will decolorize the waste, but the subsequent problem of treatment is as great as that of the raw waste. The presence of color is not indicative of the biological condition of the treated waste, but to visiting laymen the effluent looks as bad as the influent, and appearances certainly count with laymen.

Space is provided at the treatment plant for a future Magnetite filter, an additional battery of primary tanks, and a contact tank of 20-minute detention for the addition of chlorine when further treatment is considered necessary.

"Personality" of the Plant

Operation of the plant has shown its "personality," and every effort is being made to overcome the obstacles which were encountered during the early months of operation. The canneries, by inefficient operation of their screening devices, caused an unnecessary load of solids to be thrown on the plant. With the coming of the next canning season this condition will have been adjusted. From the soybean oil-extraction plant, an undue amount of oil and refuse was discharged from the centrifuges which are used for partial clarification of the oil. This refuse caused pipe stoppages, tended to inhibit the process of flocculation and sedimentation, and produced an excessive amount of floating material.

The digesters were started, one at a time, by filling them with raw sewage and applying heat by means of the heating coils. Sludge was pumped regularly from the primary tanks, and chemical hydrated lime was added directly to the digesters. The sewage originally added was therefore displaced as supernatant liquor. No difficulty was experienced, and within one month gas was available for use at the plant. There was some difficulty with tilting of the covers of the digesters, due to excessive gas pressure, but by bleeding the gas from one of the sampling wells in the cover, and dropping the water-level in the pressure-relief tank, this condition was quickly remedied.

For a coagulant, during the first season of operation, alum has been used with varying dosages. Best results were obtained with a dosage of 710 pounds per million gallons. This gave a suspended solids reduction up to 98.5 per cent, and B.O.D. reduction up to 88 per cent. However, the average B.O.D. reduction was about 70 per cent.

In order to determine the most effective coagulant from the standpoint of results and economy, the iron salts and various other coagulants are to be tried during the present year.

The digested sludge shows an average of approximately 50 per cent reduction in the organic matter, over the raw sludge. In the operation of the vacuum filter, the digested sludge with 8 per cent solids was conditioned with 3 per cent ferric chloride and 10 per cent lime, on a dry basis. It was found that by increasing the lime dosage, the ferric chloride dosage could be further reduced.

A potable water supply for the entire plant is furnished by an 8-inch well equipped with a Pomona turbine pump and a pressure-tank system. This supply has a relatively high iron content, which caused discoloration on concrete and sedimentation in the piping and boilers. It also contained an average of 64 ppm of CO_2. The installation of an iron-removal filter has proved to be very beneficial.

Conclusion and Personnel

To anyone reading this article it is evident that the chief concern of the operating personnel is the establishment of an effective and economical method of treating the strawboard waste. The devices provided for the treatment of the strawboard waste were designed to give the greatest flexibility of treatment, so that plant scale tests might parallel the laboratory experiments. The handling of domestic sewage has a background of extensive research, but this is not true of strawboard waste. The goal of this dual treatment plant, more particularly in reference to the strawboard waste, is to further the effectiveness of solids removal and B.O.D. reduction at the most economical cost. The progress so far has been limited on plant scale, but this problem does have a solution. We hope to attain this goal.

The plant was designed and its construction supervised by Floyd G. Browne & Associates, consulting engineers, Marion, Ohio. It was built under PWA grant plus the contribution of the site and financial consideration on the part of The Container Corporation of America, which preferred to have its waste treated at the municipal plant rather than to construct a private plant.

By-Line Omitted

The article "The Curse of Smoke," on pages 67, 69 and 71 of the March, 1940, issue of THE AMERICAN CITY, was written by Herman A. Davis, Newark, N. J.

New Municipal Asphalt Plant of the City of Cleveland

First Cost and Operating Costs Balanced from Bids to Secure Lowest Total Cost Over 10-Year Period

By S. H. MURDOCK
Assistant Commissioner of Engineering,
Department of Public Service,
Cleveland, Ohio

THE city of Cleveland has recently completed and put into operation a new municipal asphalt plant replacing a former plant which was inadequate in capacity, obsolete in design and rapidly becoming a heavy maintenance obligation. The new plant is intended primarily for use in the repair and maintenance of existing pavements, but it will also be used, at least in the immediate future, to furnish paving mixtures on various WPA projects being sponsored by the city.

The design and construction of the plant involves a number of interesting features, including devices for the automatic control of operation, and the results of its first season's performance indicate that it will fully comply with the requirements for capacity and its guaranteed efficiency.

How Financed

The plant was constructed by contract and was financed partially by a Federal grant through the PWA, the city contributing 55 per cent and the Federal Government 45 per cent of the total cost of approximately $200,000. Both the erection of the plant and its operation under test conditions during the past season were executed under the general supervision of PWA.

Plant Location

The plant is centrally located on city-owned property near the extension of West Third Street, and is served by a city-owned siding on the B. & O. Railroad. It was the first unit to be completed on this site which is intended eventually to accommodate a number of city activities, including bridge and sewer maintenance offices and buildings (now completed), Motor Maintenance Division garages and shops, various storehouses and yards, and the city testing laboratory.

As the plant was to be entirely new throughout and to include such features as boilers and material handling and storage equipment, the designers were able to lay out the proposed improvement with no concern as to existing facilities. This permitted a freedom of treatment which is often impossible when old and partially obsolete equipment must be revamped and incorporated into a modern improvement.

Advantage was taken of long experience in the operation of the old plant, and effort was made to eliminate to as great a degree as possible its various faults.

Type of Contract

The form of contract under which the plant was constructed was somewhat unusual, embracing a time-limit clause for completion, with a liquidated damage provision for non-compliance. Bidders were also required to set up in their proposals guaranteed costs of operation on the basis of daily production and in accordance with rigid specified conditions.

The cost of operation was to be determined by a performance test conducted by the regular city asphalt plant crew of employees under the supervision of the contractor and in accordance with definite regulations. In the event that the guaranteed cost of operation was not realized during the performance test, the contract provided that the city would accept the plant at a reduced price, such reduction being based upon the de-

The New Asphalt Plant of the City of Cleveland, Ohio, Before the Housing Was Completed

gree in which the actual operating cost exceeded the guaranteed cost. The contract contained no provision for the payment of any bonus in the event that the actual cost of operation was less than that guaranteed.

Construction was covered by a surety bond in the amount of 100 per cent of the contract, and 10 per cent was retained until the completion of the performance test.

The Instructions to Bidders and the Proposal provided that the successful bidder would be determined on the basis of annual cost to the city rather than on the original cost. The annual cost was determined by comparing the sums, on the various proposals, of the following items:

1. The annual cost of operation as guaranteed by the bidder and set forth in his proposal.
2. The fixed annual charge.

The latter item, the fixed annual charge, was computed by multiplying the sum of the lump sum bid for the work complete and the cost to the city during the construction period by 0.08723, 10 years being the assumed economic life of the plant.

The cost to the city during the construction period was determined by multiplying the number of calendar days specified by the bidder for completion by $150, this sum being set forth in the contract as the daily cost to the city during construction, during which period no plant was available for current work.

The successful bidder was the one showing the lowest annual cost to the city, and the risk of getting a plant which might be lower in first cost but might be more costly to operate was eliminated or at least greatly minimized. This method of comparing bids resulted in awarding the contract to the highest lump-sum bidder, the guaranteed cost of operation indicating that this plant could be operated at a lower annual cost than the other plants upon which bids were submitted.

Bids were received on October 20, 1938, and construction work was commenced on November 7, this date having been fixed by PWA authorities as the starting date and so specified in the contract.

The contractor's proposal indicated that the time required for construction would be 115 working days, and therefore that the plant must be completed and ready for operation on March 24, 1939. This completion date was satisfactorily complied with, the contractor turning the plant over to the city on March 22, 1939. The performance test was necessarily delayed until such time as the city had prepared and could finance a paving program.

The plant was actually put in operation on June 1, 1939, and worked continuously through the remainder of the year, meeting all demands of the paving schedule during that period.

Type of Plant

The plant as specified and constructed is a combination hot- and cold-mix plant, having a capacity of 60 tons of hot-mix or 40 tons of cold-mix per hour. The specifications upon which proposals were requested purposely avoided any attempt to specify any particular brand or make of equipment or machinery. Bidders were allowed considerable latitude in this respect, providing the city's basic requirements were complied with. In view of the extremely rigid provisions under which the performance test was to be conducted and the heavy penalties involved, as well as a further guarantee on workmanship and material which runs until September 1, 1940, it was felt that responsibility for selecting proper units for specific purposes could properly be left to the contractor's judgment; with the provision, however, that all such units must be of standard character and meet with the city's approval.

The contract included all foundation work, such work being paid for on a unit-price basis. Foundations were paid for on this basis because of some uncertainty as to soil conditions, the contract providing that proper bearing tests should be conducted by the contractor before foundation plans would be approved.

Some changes were necessary as a result of these bearing tests and it was found desirable to reduce the amount of concrete footings and increase the number of bearing piles from those originally contemplated. These modifications were readily dealt with, because they had been foreseen as possibilities and provided for by the unit price arrangement for foundation materials. The rest of the plant, including everything above the foundations, was paid for on a lump-sum basis.

The contract provided for a complete plant ready to operate, including foundations, boiler and boiler house, material-handling and storage equipment, tanks, dryer, mixer, elevators, screen and all other items essential in a plant of this type. The contract also provided for a sheet-metal building completely enclosing the drying, screening and mixing units.

These are shown in the accompanying photographs, one showing plant arrangement prior to construction of the main building and the other the completed plant as it was in operation in December, 1939.

Fuel

The plant is designed for oil burning both in the boilers and in heating and drying aggregates. No. 5 oil is used and storage is provided for 25,000 gallons, delivery being either by truck or by tank car.

Oil burners are of the low-pressure, air-atomizing type, and the equipment includes oil-air proportioning valves for automatic control, and a vaporstat to actuate a safety shut-off valve in case of air failure from the blower.

Boilers

Two 150-hp horizontal return tube boilers furnish steam for heating the asphalt and asphalt lines and for operating the steam pumps. This boiler capacity is greater than is needed for plant operation, but it is intended to use this as a central heating plant for the office building and other buildings now erected or to be erected on the site. Each boiler is a complete unit with individual feed pump, receiver and control.

Each boiler is equipped with a three-point draft gage for indicating uptake, over-fire draft and wind-box pressure, and a recording flow meter and pressure-recording instrument, recording CO_2 instrument, pyrometric stack temperature instrument, and overdraft control actuating boiler damper.

Material Storage

Storage space is provided for 120,000 gallons of asphalt cement in two 60,000-gallon combination heating and storage tanks. The asphalt is pumped from tank car to storage, and from storage to process, by steam-operated pumps and through 3-inch, steam-jacketed, insulated lines.

Mineral Dust

The city of Cleveland at the present time is using limestone dust as a mineral filler. This is received in hopper-bottom cars and is stored in an elevated steel bin of 200-ton capacity. This material is moved from car to storage or to process, or from storage to process, by a Fuller-Kinyon pump system having a guaranteed capacity of 10 tons per hour. This system, because of its low pipe-line velocity, is expected to be low in maintenance cost.

Arrangements have also been made to receive and handle dust in sacks in case of emergency or when hopper-bottom cars are not available.

Sand and Coarse Aggregate Storage

Sand and coarse aggregate are received either in car-load lots or in trucks, dumped upon a belt conveyor through hoppers, and distributed to any one of five concrete silos. Storage is provided for about 1,000 tons of this material and is intended merely as a reserve supply in the event of interruption in delivery. As this material is purchased on a requirement contract, delivery is always possible as production demands require, and there is no need for more extensive storage facilities.

Material is reclaimed from storage by a belt conveyor and deposited at the boot of the cold elevator to the dryer. Proper proportioning is secured by means of reciprocating double plate feeders with capacity of 30 tons per hour.

The Completed Plant in Full Operation a Month after the Performance Test Was Completed

Dryer

The dryer is a combination two-fire dryer-cooler, 75 inches in diameter and 35 feet long. It is equipped with nine rows of 10-inch lifting channels for cascading the materials. The dryer is driven by an 18-tooth manganese spur pinion and a 114-tooth gear ring. It is operated by a direct-connected 50-hp gear motor with a reduced voltage-type, manually controlled switch.

Hot Screen and Hot Storage

Hot material is screened by a 4 x 10-foot vibrating screen which separates the aggregates into four sizes and deposits them into a four-compartment 60-ton hot-storage bin. Each compartment is provided with an overflow spout to prevent mixing of different sizes.

Hopper bottoms on each compartment are provided with swinging shut-off gates for easy control, and also with outlets leading to Jeffrey-Traylor feeders. The feeders are actuated by photo-electric cells, and the final quantities in each batch are automatically controlled in this manner.

Mixer

Paving mixtures are mixed in a 4,000-pound Cummer steam-jacketed mixer with manganese-steel liner plates 3/4-inch thick. The mixer is of the "run-around" type with two-piece teeth having easy adjustment.

Dust Collector

The plant is equipped with a complete dust-collecting system, including connections to the feed end of the dryer, the vibrating screen, the top of the hot elevator, and the mixer enclosure. The dust collector is of the Multiclone type, manufactured by the Research Corporation, and is guaranteed to collect and remove 90 per cent of the dust originating at the points mentioned.

The primary purpose of the dust-collecting system is to eliminate nuisance and incidentally to salvage valuable mineral aggregate driven off in the process of drying. Recovered dust is at present put back into the dried material, but this portion of the system is not yet in its final shape, further refinements being contemplated in the near future.

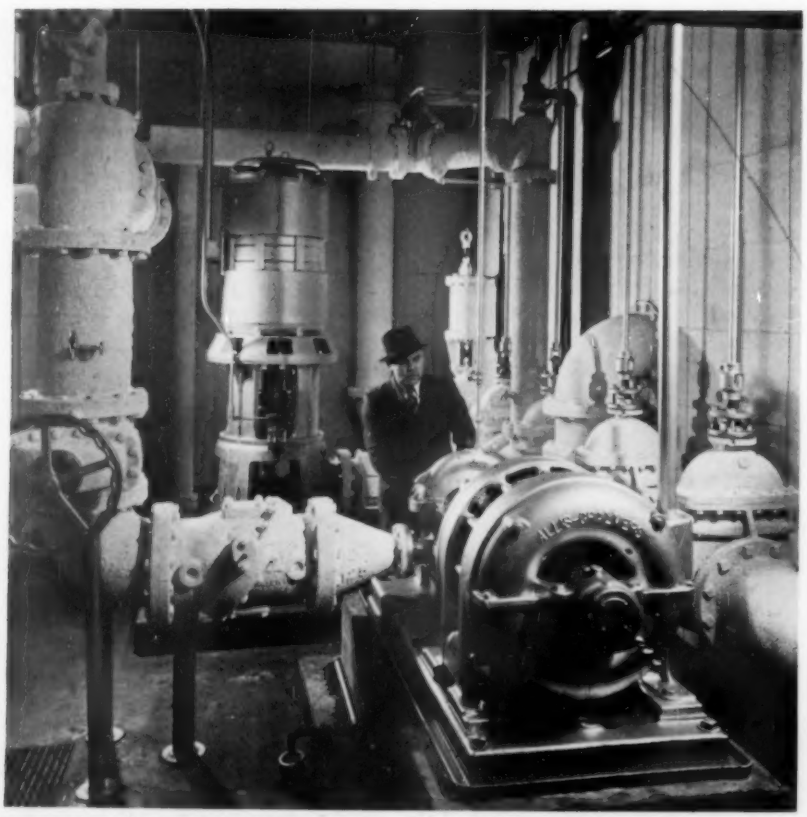
Plant Control

The various plant operations are controlled automatically to as great an extent as was thought desirable in order to reduce labor cost and secure uniformity of output. Automatic controls were considered particularly necessary in the regulation of temperature and in the weighing and proportioning of aggregates.

A recording potentiometer has been installed in the boiler house to indicate and record the tempera-

(Continued on page 103)

A New Water



Eugene J. Voelker, Water Superintendent, Lake, Wis., looks over the new booster pumps. The deep-well pump is seen in the background

EARLY in January, 1940, the town of Lake, adjacent to and just south of Milwaukee, dedicated its unique Town Building. This building contains not only all the town offices, but the water-works pumping station and accessory equipment, and an attractive central tower enclosing a million-gallon water tank. The entire tank from the ground to the spherical top is encased in architectural concrete, forming an attractive octagonal tower. The basement houses the deep-well and booster-pumps control equipment, heating plant, meter repair shop and stock room. The ground floor is built up in four quadrants from the 65-foot diameter tank and contains all the municipal offices. The roofs of the quadrant are designed for ponding in the summer by flooding them with 55-degree well water.

New Water Supply

The water district of the town of Lake comprises 3.75 miles and contains a population of 5,000, with no utilities or industrial plants at the present time. In choosing the new supply, the proximity of Lake Michigan suggested a lake-shore plant. This would have required a tunnel nearly two miles in length in order to eliminate pollution and stoppage caused by seasonal ice congestion. Preliminary figures also indicated that the expense would exceed fifteen times that of an artesian well. While the well water requires softening, this expense would have been more than offset by the cost of the filtration plant required for the lake water.

Tower Houses Town Offices

Town of Lake, Wis., Solves Dual Problem of Beauty and Utility in New Water System

Distribution System

A ten-year growth figure was used to determine the capacity of the distribution system and the new storage tank. The one-million-gallon storage tank was designed at an average water-level at elevation 279, resulting in pressures that range from approximately 50 pounds per square inch at high points to 90 pounds per square inch in the lower sections.

In compliance with the National Board of Fire Underwriters' requirements, 517 fire hydrants were installed in the district served by the distribution system, and each hydrant is provided with an individual shut-off valve. Enough valves were also installed in the distribution system to close off any one block without interfering with the remainder of the system. This required a total of 909 valves.

A total of 43 miles of centrifugally cast bell-and-spigot pipe from 6 to 16 inches in diameter and in 18-foot lengths was laid in the clay soil with a minimum coverage of 6 feet. The clay was readily removed by power excavators, so that the pipe crews laid about 500 feet per day. The reason for the use of 18-foot lengths of pipe is twofold. This length decreases the number of joints, and therefore the possibilities of leaks, by fully one-third. The longer lengths netted a saving of $100,000 in the laying of the mains, as compared with the conventional 12-foot lengths. Lugged pipes with buttresses were installed under all railroad crossings, and Teague Mineralead and hemp was used for all joints. The distribution system cost $669,000, or about $3.70 per foot for the various sizes of mains, including hydrants, gate-valves and allied equipment.

The Artesian Well

A 16-inch diameter casing for the artesian well was set inside a 21-inch diameter casing for the initial 504 feet of the 1,834-foot well. This initial casing was through Niagara limestone, and then a 12½-inch casing was carried through the Richmond shale and the Galena-Platteville dolomite formation for an additional 200 feet. From that point a 12½-inch bore continued uncased through the St. Peter and Eau Claire sandstones and into the Mt. Simon sandstone to the total depth of 1,834 feet. The annular space between the 16-inch casing and the 21-inch casing to the 504-foot level was filled with cement grout, requiring 1,000 bags of cement.

A preliminary test of the well showed a yield of 1,200 gpm with a drawdown of 150 feet and a water temperature of 55 degrees.

Water Softening

Chemical analyses of the water showed a hardness of 26 grains per gallon with a trace of iron. To remove the hardness, three gravity type Permutit zeolite filter beds, each 12 x 12 feet in area with a capacity of 600 gpm, and each containing 324 cubic feet of zeolite, were built. Permutit control panels and Simplex float valves in conjunction with Trident Crest meters permit simultaneous operation of all three filter beds when necessary, although only two are used normally.

Prior to entering the softeners, the water is aerated through a cascade-type aerator consisting of five steps of ceramic tile supported in cast aluminum trays. The aerated water flows to a settling tank, the

The Control Table for One of the Zeolite Water-Softening Units at the New Water Works of the Town of Lake, Wis.

level of which is maintained within 1½ inches by an automatic float control. To expedite aeration, a motor-powered blower forces 3,200 cfm of air through the water as it cascades down the aeration pyramid.

In the pump-room is a fully enclosed chemical feeder, manually controlled, and driven by a ⅛-hp motor. This unit delivers from 5 to 30 pounds of lime per hour from an 11-cubic-foot capacity hopper through a vortex solution device. The lime-feed motor and the control of water flow are designed to operate in synchronism with the deep-well pump.

Salt for regenerating the zeolite softening filters is stored in a concrete brine tank having a capacity of one carload of salt. This storage tank, 300 feet from the softening plant, is on a spur track of the Chicago, Milwaukee and North Shore Railroad. As the tank is 40 feet below the softening-plant elevation, the brine is delivered to the plant by two 10-gpm electrically driven centrifugal pumps, operating automatically and delivering the brine against a head of 50 feet. Provision is also made to receive salt by truck in the event of the interruption of rail service.

A Layne-Northwest well pump operating at a rated capacity of 900 gpm against a total head of 275 feet, driven by a Louis Allis 100-hp, 1,200 rpm, squirrel-cage, vertical-type motor, operating on a primary voltage of 3,810 volts, alternating current at 60 cycles, is used in the well. This high voltage was adopted to eliminate the expense of installing the conventional bank of step-down transformers, and also to eliminate transformer-core losses.

An Allis-Chalmers single-stage, double-section, 900-gpm booster pump is also installed in the plant, working against a head of 175 feet. It is driven by an Allis-Chalmers squirrel-cage motor, also connected for 3,810 volts.

The Tower and Building

The foundations of the main central tower and elevated tank consist of approximately 2 miles of cast-in-place concrete piles reaching to an average depth of 50 feet. The octagonal wall around the tank, as well as the wall extending across the front of the building, is supported on concrete piles. Where this wall is adjacent to the main tower columns, it is supported on the same piers.

The interior walls of the offices are plastered with two applications of Keen cement over expanded metal laths. The Council Chamber has shoulder-high wainscoting of red-oak panels in a silver-gray tone, and with a hand-rubbed finish. The main floors are covered with dark asphalt tile, while terrazzo is used in the corridors. Red-tile flooring covers the aerating chamber and pump-room floors. The pump-room walls are made soundproof with acoustic tile, and the piping is insulated with two applications of granulated cork in mastic and finished with enamel. Jail cells, located on the third floor over the main entrance, have tool-proof steel floors, as well as doors and window gratings.

In compliance with the regulations of the Civil Aeronautics Authority, the windows of the fourth floor below the tank are illuminated with red lamps. Eight 150-watt floodlights are mounted on brackets attached to the ceilings, and sixteen floodlights are hung from the underframing of the tank, with beams directed through the windows enclosing this area. Similarly, the glass brick areas in the walls of the tower at the two-thirds height are illuminated by eight 150-watt red floodlights. Each of these glass brick areas is 4 x 20 feet, and there are eight pairs of them.

At the top of the tank is a flashing red hazard beacon with a double Fresnel-type lens, equipped with two 500-watt lamps wired to burn simultaneously. It is controlled by a motor-operated flasher producing 40 flashes per minute, and having a luminous period of 1 second and a dark period of ½-second.

On the roof of the third-floor level are eight floodlights to illuminate the upper exterior walls of the structure. These 1,000-watt lights have diffusing lenses and are on swivel bases anchored to the parapet wall.

A 20-inch steel riser pipe extending from the tank bottom to one of the octagonal corners is fastened to girders and connected to the booster pump. The 12-inch steel overflow pipe extends from the top capacity line of the tank.

Costs

The cost of the concrete structure, exclusive of the portion which would have been required for the elevated tank in any other case, was $161,500. This includes the complete offices with the necessary heating, plumbing, air conditioning, electrical work, and the modern specially designed furniture. The deep well cost $26,000, the pumping and softening equipment $85,999, the concrete bridge approach to the structure $45,000, the spur track and electric utilities $10,600. The entire project, including engineering and interest on construction, cost approximately $1,300,000.

Credit for the design of this unusual structure is due William D. Darby, consulting engineer, West Allis, Wis., who through his resident engineer, E. P. Sheahan, supervised the construction of the tower and building. Mr. Darby also designed the entire waterworks system, including the bridge, deep well and softening plant. All the work was performed under the supervision of him and his staff. Eugene J. Voelker is Water Superintendent for the town of Lake.

Recognition for New Citizens

THE American Library Association, in its January, 1940, *Bulletin*, calls attention to the committee on induction into citizenship, which has just been appointed by the National Education Association. The aim of the committee is to give to the 2,000,000 young men and women reaching voting age each year, a sense of the significance and responsibility of becoming a citizen in a self-governing democracy. The NEA expects to provide popular, inexpensive printed material to be used in extensive programs of civic education, which would precede public recognition of new citizens by a suitable ceremony, on a Citizenship Recognition Day.

For further information, address the National Education Association, 1201 Sixteenth Street, N. W., Washington, D. C.

Rehabilitating Old Wells at Camden, N. J.

Seven 15-Year-Old Wells Brought Back to 95 Per Cent of Original Capacities

By W. M. Lewis
Layne-New York Co.

The Central Pumping Station, Puchack Plant, Camden, N. J.

ONE of the largest single reconstruction projects ever undertaken by the Layne-New York Co. has recently been completed in Camden, N. J., and succeeded in restoring 6.5 mg of decreased daily capacities from seven Layne wells which had been in service from fourteen to fifteen years. This work brought these wells of the municipal water-supply system back to 95 per cent of their original capacity.

The Camden municipal supply is drawn entirely from 27 Layne well units having a total capacity of over 40 mgd. The reconstructed wells are in the Morris and Puchack fields at Delair, N. J., six miles north of Camden. They were of the original city standard, having 38-inch outside and 26-inch inside casings and 26-inch Armco screens. Silicon bronze screens, which are standard today, were not available in large sizes in 1924 and 1925 when these wells were installed. Increasing encrustation throughout the period of operation had closed the shutter openings with a very hard deposit, making the usual cleaning methods ineffective and resulting in a very substantial cumulative decrease in production capacity.

The work of rebuilding the wells was done in July and August, 1939, in order to meet the September water demand peak. Three crews were used part of the time, but only two most of the time, owing to the impossibility of shutting down more than two wells at a time because of increasing summer seasonal demands.

Method of Cleaning

It was considered inadvisable to attempt to remove the original screens or to rip them with a cutting tool, because of the danger of pulling apart or collapsing the inner casing and screen, which would cause the overlying clay to slide or cave into the water-bearing formation. It was imperative that the screen shutter slots be opened wide to permit free inflow, without regard to any further value of the shutters as a screening medium. This was accomplished by the use of a mild explosive, heat and a chemical.

The procedure generally employed was first to remove the vertical turbine pump after a check test of the producing capacity of the well. An explosive was used to break up the hard scale and permit the most effective action of the chemical. Steam was then introduced into the screen for several hours through a steam line from a portable boiler until the water in the well was almost at the boiling point. The use of steam reduced the period of chemical treatment to about half that required when using cold chemical. This was made necessary by the fact that adjoining wells, within 700 feet, could not be shut down, and too long a period would permit the chemical to be drawn away from the well under treatment and into the adjoining operating wells.

The pump was then reinstalled and the well pumped clear until there was no reaction on litmus paper. A further check on capacity was then made.

The next step was the installation of a new 18-inch silicon-bronze lining screen, followed by regraveling and development to the maximum capacity obtainable. The pump then was installed with a new 15-inch bowl replacing the 24-inch bowl of the original pump, which was too large for the lining casing, the well was pumped clear and a final test made. In some cases it was necessary to place the lining screen in position before shooting and cleaning with chemical, owing to the danger of disturbing the formations and causing a slide. Although more vigorous backwashing was required in these cases, the results were equally good. All the pump motors were serviced and checked for balance, the pump columns were cleaned and repaired, the pump heads painted and the job cleaned up.

Comparison with New Wells

Two new wells constructed in the Puchack field, one in 1939 and one in 1938, have demonstrated the results gained from improved

Typical Pump House, Showing Repair Outfit in Place

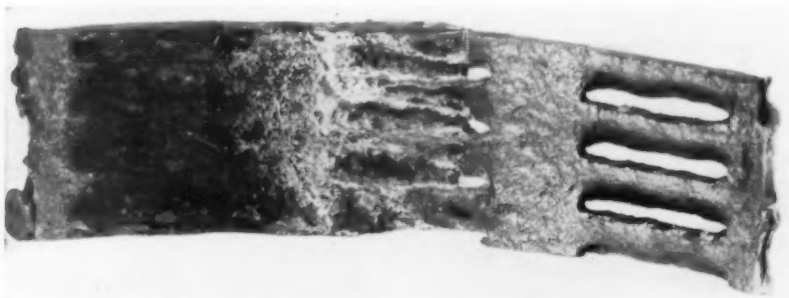
COMPARISON OF OLD AND NEW WELLS AT CAMDEN, N. J.

	Average of Original 5 Wells	New Well No. 1	New Well No. 2	Per Cent Increase No. 1	Per Cent Increase No. 2
Specific Capacity.	25.1	33	34.3	31.4	36.6

methods which have been developed since the original five wells in this field were installed. The new wells are of the under-reamed type with smaller casings and screens, 26-inch outside and 18-inch inside casings with 18-inch silicon-bronze shutter screens. The diameter of the under-reamed gravel filter area is 36 inches. The outside casing is sealed throughout its length, with cement which completely fills the aperture between the rotated clay wall and the outer casing, thus preventing seepage of surface waters or upper waters of bad quality down into the water-bearing formation.

The efficiency of a producing well, aside from the permanent pump efficiency, is measured by the yield in gallons for each foot the pumping level is lowered below the static water level and is designated as the specific capacity of the well. This is a variable factor and depends directly upon the extent of development of the water-bearing formation. The above table shows the specific capacities of the two new wells in comparison with the average specific capacities of the original field of five wells at Camden, N. J.

These greatly increased yields reflect directly in substantially lower power consumption in proportion to the decrease in total head.



A piece of the old well screen removed for testing with the cleaning chemical. The part not immersed shows how the screen was almost entirely closed by incrustation. The right-hand part shows the openings almost free after treatment with chemical

Water-Rate Boost in West Allis, Wis.

WEST ALLIS, a suburbs of Milwaukee, with a population of more than 40,000 adjoins the larger city and, having no artesian well water supply, gets its water from Milwaukee. The suburb had been charging its residents 10 cents per 100 cubic feet for water, this charge being based on a rate of 6 cents which the suburb had been paying to Milwaukee for all water delivered from the metropolitan pumping station. The latter rate had been made years ago, and was recently increased to 8 and 8½ cents per 100 cubic feet.

A petition was filed with the Wisconsin Public Service Commission, asking permission to increase the West Allis rate to water users, but graduated rates were requested, depending on the size of meters. This petition was granted by the Commission in February and amounts to about a 25 per cent increase. The Commission also recommended that the water utility be placed in the hands of a board.

The sliding scale to go into effect in West Allis immediately provides for water rates of 10 to 11.5 cents per 100 cubic feet, with a general service charge of 75 cents per quarter for ⅝- to ¾-inch meters; $2.25 per quarter for 1- to 1¼-inch meters and $3.75 for 1½-inch meters.

In its order the Commission declared:

"The West Allis Water Department is being managed by the Mayor and Common Council rather than by a water commission. There is no separation of water utility cash receipts and disbursements from the general fund transactions covering purely city business. It is recommended that a separation be made between the utility and general funds and that the management and operation of the Water Department be placed in the hands of a board designated in the statutes."

The water supply to the suburb has been in controversy for many years. In 1906 the city of Milwaukee agreed to supply West Allis with water from Lake Michigan, through the Milwaukee pumping station and mains, at 6 cents per 100 cubic feet. In 1921 Milwaukee attempted to increase this price to 10 cents, but was unsuccessful. In 1927 Milwaukee threatened to cut off the water supply if the suburb did not pay the higher rate, but West Allis appealed to the Wisconsin Public Service Commission, and the latter advised Milwaukee to go on in the old way until the subject could be ironed out by the Commission. Milwaukee took its case to the Wisconsin Supreme Court and was upheld. However, water continued to flow to West Allis, but in 1930 the city of Milwaukee began charging at the rate of 10 cents per 100 cubic feet. The suburb refused to pay more than the 6-cent rate. Milwaukee then brought legal action to recover the difference. The first week in November, 1939, Judge Gustave G. Gehrz of the Circuit Court decided, after a 21-day trial, in favor of Milwaukee, the judgment being $409,648.74 plus interest to November 20, 1939, of $136,368.19.

The question of the amount due for water was based on the valuation of the Milwaukee water-supply system, Judge Gehrz upholding the Commission in its findings that the rate case for Milwaukee's system was $23,000,000, excluding the new water-filtration plant, which would add more than $5,000,000. The Judge held that a fair return on the investment was 5½ per cent during the years 1930 to 1939 inclusive, and based his decision on such return to Milwaukee.

On to Kansas City
A. W. W. A.
Annual Convention
April 21-25
We'll See You There!

All Motor Vehicles Tested by

Cincinnati's City Garage

Which Also Maintains City-Owned Equipment

By C. O. SHERRILL
City Manager, Cincinnati, Ohio

At Right — Mayor James G. Stewart; Colonel C. O. Sherrill; A. M. Sauer, Superintendent of the New Municipal Garage and Safety Lanes

COMPULSORY semi-annual inspection of all motor vehicles owned by residents of the city, and the testing, maintenance and repair of all motor equipment owned by the municipality, became officially operative on April 1, 1940. The half-million-dollar garage and inspection lanes were dedicated on January 13, when President A. F. Sommer of the Traffic Safety Council predicted that probably 40 per cent of the vehicles would not pass the first inspection and that a heavy percentage would be taken off the streets entirely.

Mayor James G. Stewart accepted the plant on behalf of the city. J. E. Root, whose Department of Public Works supervised construction of the new plant, said: "Everything about the building is complete even to ventilators for carrying off exhaust gases from vehicles being inspected." There are five lanes in the inspection lane building. One is for big tractor-trailer units and another for commercial cars. All five lanes can be used for passenger vehicles; 33 men do the inspecting in the following order:

Stop 1: Name and address of owner, make, year, mileage, license number, horn, windshield wiper, license certificates, driver's license, tail, stop, parking and other lights.

Stop 2: Steering, pedals, windshield, rear-view mirror, left-window regulator, turning signals.

Stop 3: Front axle assembly, tires, tie rods, drag link, steering arms, wheel bearings, wheel wobble, exhaust pipe and muffler.

Stop 4: Brakes, service and hand, brake drums.

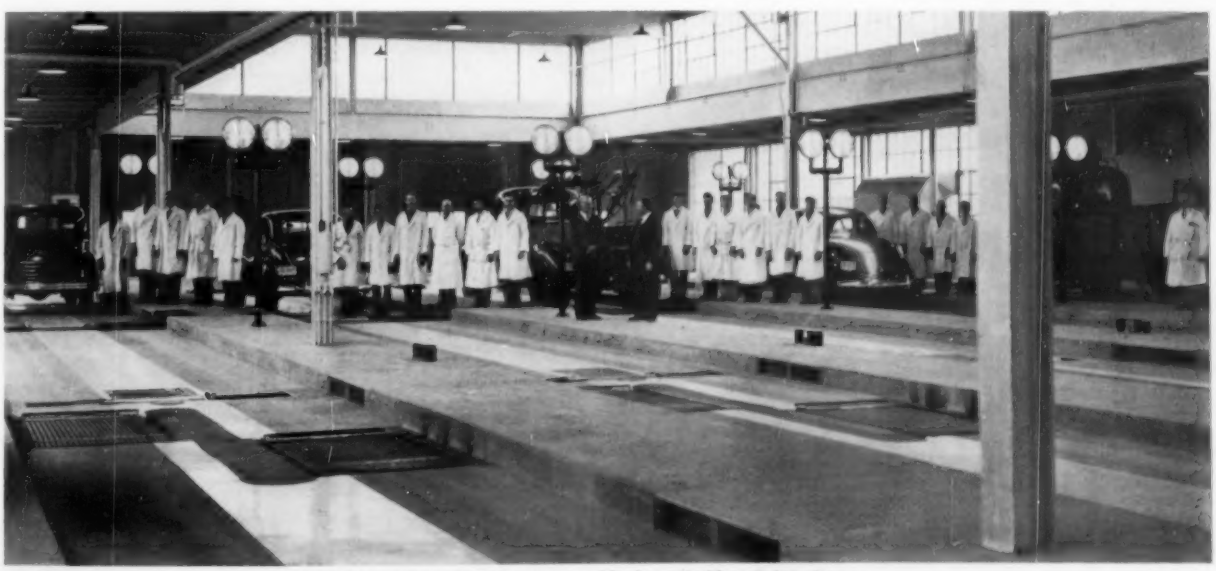
Stop 5: Headlight beams.

Stop 6: Towing devices, pintle hooks and fifth wheels on trucks, final check.

This testing station emphasizes the importance of safe operation and effective maintenance of all forms of city-owned equipment, and assures us that none but safe vehicles will hereafter be operated on the streets of the city.

The testing and inspection lane was opened January 15 on a voluntary basis, and 34,408 vehicles have been inspected. Of 27,511 private vehicles, 8,311 (30 per cent) were rejected at the first inspection, 775 (9 per cent) on second inspection, 92 on the third, 7 on the fourth, and 874 were not passed at all. Of 526 official units 120 (23 per cent) were rejected on the first inspection.

The garage will service and



Motor-Vehicle Inspectors at Cincinnati's New Safety Lanes

Cincinnati's New Garage and Safety Lanes Plant

maintain every piece of equipment the city owns. The various departments which it includes are as follows:

1. Motor room for reconditioning motors.
2. Grease rack room with ramps for greasing trucks and passenger cars.
3. Chassis dynamometer room for mechanically testing road equipment.
4. Electrical department for testing electrical equipment with a special room for police radio repairs and servicing.
5. Battery department where the city builds its own heavy-duty batteries and makes its own distilled water.
6. Tire shop for repairing casings and tubes; includes two compressor units which automatically supply air under 120 pounds pressure.
7. Stock room; includes basement, first and second floors.
8. Heavy-duty shop for repairing road rollers, bulldozers, pushers, shovels, cranes, concrete mixers. A 10-ton crane with 48-foot span aids the repair of heavy-duty equipment.
9. Blacksmith shop and heat-treating room.
10. Welding room for acetylene and electric welding.
11. Motorcycle shop has equipment for repairing, maintaining and road-testing motorcycles.
12. Auto-body shop for all body rebuilding and repair work; also rebuilding brooms on city sweepers.
13. Paint shop contains two paint-spray rooms, one 20 x 20 feet and the other 20 x 30 feet, and an air-conditioning system.
14. General repair floor for cars, trucks, mowers and other light machinery; completely free of columns or supports.
15. Machine shops.
16. Mechanics' locker room, wash-room and showers.
17. Recreation room.
18. Brake-test room.
19. Offices for garage officials and cost clerks, located between garage and inspection buildings.
20. General shop office located in center of repair floor.

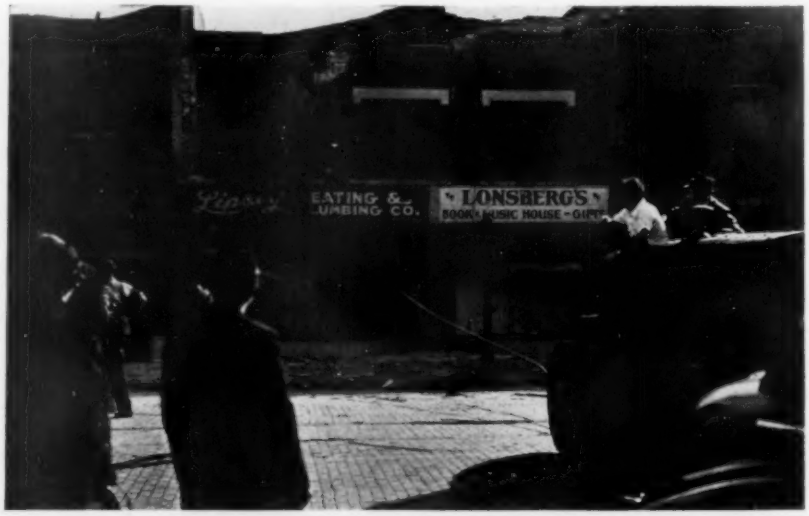
A. M. Sauer is superintendent of the garage, and J. L. Maurer is his assistant. The garage is one of the operating divisions of the Department of Public Works under J. E. Root.

The garage builds approximately 900 new batteries with special heavy-duty plates and rebuilds approximately 400 every year. Fifteen hundred generators and 1,200 starters are serviced annually. A $15,000 stock of parts is carried at all times. More than 400 rotary brooms are manufactured each year for the street-sweeping equipment.

At the new municipal repair garage all city automotive equipment will be maintained and serviced. All this work is done on the first floor of the building, on which there is provided 62,340 square feet of floor. The basement of the building is used by the Waste Collection Division for night storage of all equipment used in the central district for collection of municipal wastes.

Removing Hazards Created by a Tornado

THE tornado which passed through a portion of Georgia on February 10 left hazardous wreckage. Immediately afterwards, the city of Albany, Ga., sent out a plea for tractors, cable and drivers to pull down dangerous walls, and to remove fallen trees which blocked streets. The Yancey Tractor Co., whose headquarters had been almost completely destroyed, retrieved two of its diesel tractors out of piles of débris, got two drivers for them, and put them to work for the ruined city. The accompanying picture shows one of the machines pulling down the condemned Woolfolk Building, near Pine and Washington Streets. In another location a Caterpillar diesel electric set was rushed into service to supply emergency light and power for the Yancey Tractor Company.



Condemned Building in Albany, Ga., Wrecked by the Recent Tornado, Being Pulled Down by a Caterpillar Diesel Tractor

Close Control of Operation of Small Sewage Plant

Sheboygan Falls, Wis., Treatment Plant, Operating at One-Seventh Capacity, Has a Good Laboratory

By Edmund Malinowski
Chemist,
Sewage-Treatment Plant,
Sheboygan Falls

THE Sheboygan Falls sewage-treatment plant is just starting its third year of operation and has performed successfully, giving satisfactory results with no serious trouble. The plant serves a population of approximately 3,000 inhabitants and receives an average flow of 300,000 gallons per day. The plant is designed, however, to handle and treat 450,000 gallons per day in 1950 and will take care of peak flows 200% of the average flow. The plant is provided with a bypass which begins to operate when the plant flow reaches 625 gpm. It was built as a PWA project with a 45% grant from the Government.

Laboratory Control

In considerable measure the success of the operation of the plant has been due to the laboratory facilities furnished by the city. The laboratory contains all the modern equipment necessary to make the tests required for successful plant operation and for State Board of Health monthly reports. Dissolved oxygen tests are made daily of the filter effluent and final effluent, and weekly of the raw sewage, the primary settling tank effluent, and up-stream and down-stream of the outfall as well. These tests are important from a pollution standpoint, particularly as a deficiency of oxygen in the river into which the treated sewage flows would result in a depletion of fish life.

The five-day biochemical oxygen demand test is similar to the dissolved oxygen test, as it represents the amount of oxygen used by a specific sample of sewage or river water over a period of five days during which it is incubated with a constant temperature of 20 degrees C. This test is made every six days from the same places where the dissolved oxygen tests are made. In order to get representative tests, the samples are collected each half-hour over a period of 24 hours, the amount collected depending on the sewage flow.

Once every six days a settleable solids test is made of the raw influent, tank effluent, filter effluent, and final effluent. These tests are made in Imhoff cones from a composite sample and indicate the amount of settleable solids present in milliliters per liter. The test is made to determine the per cent of reduction of settleable solids between the various tanks and processes, and to determine just what percentage of the settleable solids actually settles out and is removed from the liquid sewage.

A suspended-solids test is made on a composite sample the same day and gathered from the same places as the sample for the settleable solids tests. This indicates the amount of solids which are in suspension and which will not settle out. The suspended solids removed are later ignited at a low red heat at approximately 1200 degress C. to determine the loss on ignition.

Many of these tests depend on the use of the analytic balance, which weighs all samples to the nearest tenth of a milligram. A precision drying oven, adjusted to 103 degrees C., is also used in many operations to completely dry the various samples.

Daily tests are made of the pH from the same places mentioned in previous operations. This test shows the degree of alkalinity or acidity of the specific sample. Also, on days when the chlorinator is in operation, a residual chlorine test is made, showing the amount of free chlorine present in the sample. The pH tests are made with a Wallace & Tiernan Comparator, and the residual chlorine tests with a Hellige color disk outfit.

Certain weather data, including temperatures and total precipitation of snow, sleet or rain, are taken daily.

Periodically relative stability tests are made to determine the same general information as the

The Laboratory Table Where the Operation of the Sheboygan Falls Sewage-Treatment Plant is Carefully Checked

The 110-Foot Diameter Trickling Filter and the Front of the Main Control Building

dissolved oxygen tests, although it is not as accurate or definite. It does, however, give a general idea of the oxygen content of the sample taken, which is most generally the effluent. Relative stability may be defined as the ratio of oxygen available as dissolved oxygen, nitrite and nitrate oxygen, to the total oxygen required to satisfy the biochemical oxygen demand. These tests which have been briefly discussed do not represent all the laboratory tests made, but they do give some idea of the laboratory work which is done at the Sheboygan Falls plant.

Measuring the Sewage

The sanitary sewage from the city is delivered to the treatment plant through a 16-inch intercepting sewer. As the sewage reaches the plant, the volume is measured by a Bailey venturi meter, which records the volume on a circular chart and also registers the total sewage flow. The recording charts are changed at the same hour and minute daily and filed as a permanent reference record.

Comminutor and Primary Settling

The measured sewage then passes through a Chicago comminutor consisting of a slotted vertical drum with cutting teeth revolving within the drum slots. This reduces the solids to a small size while they are carried in the liquid. The comminutor is operated automatically about one minute out of every three and is controlled by a time clock.

From the comminutor the sewage passes into a primary clarifier tank 50 feet long, 16 feet wide and 8 feet deep, holding approximately 48,000 gallons. In the primary clarifier the solids settle out and are mechanically scraped to a pit, at one end from which they are later pumped to a digester. The Rex sludge collector is also equipped with a grease-skimming device, carrying the grease to a scum trough, from which it flows into a pit and is pumped out with the sludge.

Trickling Filter and Final Settling

The effluent from the primary clarifier flows into a wet well located under the storeroom of the main plant building. This wet well is of small capacity and acts only as an equalizing basin between the sewage flow and the pump operation. The three Yeomans centrifugal pumps have a combined capacity of 900 gpm and are controlled automatically. The operating cycle is governed by the amount of sewage entering the plant. They deliver the sewage from the wet well to the trickling filter.

The rock bed of the trickling filter is 110 feet in diameter and 7 feet in depth and is underlaid by a system of tile underdrains. It is equipped with a Dorr rotary distributor which spreads the sewage uniformly over the surface as a thin spray. The liquid trickles through the rock, being clarified by the bacterial growth on the rock. Periodically this gelatinous growth, black in color, becomes too heavy to support its own weight, breaks off and is washed from the bed by the sewage and is deposited in the final clarifier.

The final clarifier is the same size as the primary tank and performs the same type of work. The liquid discharged is quite free from organic material and is of a sufficiently stable character not to pollute the river into which it is discharged. The outfall sewer is 15 inches in diameter and about 400 feet long. The effluent is entirely odorless, has a rather high oxygen content and is clear.

Chlorination

A Wallace & Tiernan chlorinator, located in the same room as the Bailey sewage meter and the comminutor, measures the chlorine used in sterilizing the sewage and in odor control. Depending upon the condition of the sewage, the chlorine is applied either to the incoming sewage or to the liquids before they are pumped to the trickling filter. Owing to the septic condition of the sewage in warm weather, the chlorinator is used more often at that time than in cold weather.

Sludge Digestion

The sludge from the primary clarifier is pumped by a Yeomans-Carter sludge pump into the digester. The pump is of the variable-speed type and is adjusted at present to its lowest speed because of the rather small amount of sludge produced. It handles approximately 44 gallons of sludge per minute with its present adjustment, and the average total daily pumpage is about 55 minutes, or 2,420 gallons.

The digester is a circular concrete structure 35 feet in diameter and 16 feet deep, equipped with heating coils and a PFT floating cover, which rises with an increase in sludge volume and recedes when the sludge is lowered. A liquid temperature of 87 degrees F. is maintained constantly by means of the heating coils and is not allowed to vary more than 1 degree either way. The bacteria in the

sludge convert unstable organic compounds into stable compounds accompanied by the production of gas equivalent to approximately 1 cubic foot per person per day. The floating cover is so constructed that the gases may be collected. It requires from 90 to 120 days to convert the unstable compounds into a stable, inoffensive form.

The digested solids are run by gravity from the digester into sludge beds for drying. These four sludge beds are of sand overlying a system of tile underdrains and will hold about 3,000 cubic feet of sludge. The well-digested sludge before drying has an odor similar to peat moss, but when it is dry, the odor disappears completely. Under normal conditions a bed of sludge dries in 90 days. Some of the dried sludge is pulverized with a Royer sludge disintegrator and is used on plant lawns and flower-beds as a soil conditioner. The remainder of the dried sludge is sold at a very low price to local gardeners and residents for soil improvement.

Use of Sludge Gas

The gas collected under the floating cover of the digester is piped to a PFT Type A flame trap and clarifier in the basement of the main plant. This PFT clarifier has three compartments, which include a water seal. A steady stream of water flows continuously through the unit to prevent any escape of gas. After passing through a meter, the clean gas is used in a Peerless Heater Co. commercial gas boiler which is thermostatically controlled and furnishes the water for heating the digester and the plant. A separate gas meter measures the gas used in this boiler.

In winter, when a great deal of heat is needed owing to the geographical location of the plant, the gas produced is not sufficient to satisfy all needs, so a Kohler coal boiler is used to supplement it. On the other hand, in summer there is very often a surplus of gas, which is burned in a PFT waste-gas burner located on the roof. Gas produced in the digester is similar to commercial gas, containing from 60 to 65 per cent methane, but it has a heat value approximately 25 per cent greater than commercial gas. It burns with an almost odorless and colorless flame.

Rear of the Main Plant Building, Showing the Digester at the Left

The Main Building

The main plant building is a one-story brick structure with a storeroom. In the basement are the pumps, boilers, and domestic water softener, and on the ground floor are the clarifier room, storeroom, chlorine, screen and flow meter rooms, and a combination office and laboratory. The digester and rock filter as well as the four sludge beds are separated from the main building.

The plant was designed and constructed under the supervision of The Jerry Donohue Engineering Co., Sheboygan, Wis., and is cared for and operated by full-time employees, Guy Melendy, chief operator, and the writer as chemist.

Taste and Odor Control by Threshold Treatment

Herbert F. Lord and William B. Lockhart,
Superintendent and Chemist, Report on Experience at Fostoria, Ohio

THE Fostoria water filtration plant was placed in operation in January, 1929, and was designed for 3 mgd capacity. It is a lime-soda softening plant, including recarbonation and both pre- and post- chlorination Activated carbon has been used for the past seven years for taste and odor control until June, 1939, when threshold treatment began following numerous complaints of red water from consumers in two different parts of town, one at the extreme end of the distribution system, and the other close to the plant. When flushing of the system by opening hydrants every two days gave little relief it was decided to try the threshold treatment.

After ordering a supply of sodium hexametaph asphate a crude feed device was set up consisting of a large tank in which the cnemical was mixed and from there fed through a garden hose with a regulating valve into the water after it had been filtered and just before it entered the clear well.

The success of the treatment, which started at 2 ppm and was shortly lowered to less than 1 ppm and finally to ½ ppm, has been such that a small pump has been installed to feed the chemical. The old crude outfit has been dismantled.

All complaints of red water ceased about one week after the threshold treatment was started.

St. Paul Airport Built Above Floods

New Field at Site of Original Airport Rapidly Approaches Completion—New Administration Building

THE first airport in St. Paul, Minn., was started in 1927 with a 70-acre field on the shore of the Mississippi River and 1.5 miles from City Hall. The St. Paul Municipal Airport, Holman Field, of 1940 includes the original field, but it has been expanded to 350 acres, the level of the field has been raised 6 feet as insurance against flooding from the river, and the NW-SE runway, which has favorable winds 72 per cent of the time, has been extended to 5,500 feet and, like all the other runways, is paved from end to end.

The Original Field

The development of the original field was accomplished with an expenditure of $300,000, which included the cost of the land. Two turf runways each 2,500 feet long, and with no lights, were completed after about 300,000 cubic yards of fill had been made to level the field, and a municipal hangar was constructed.

The 1930 Enlargement Program

In 1930 the city spent $500,000 in enlarging and improving the field and added 700,000 cubic yards of fill. Two 1,600-foot hard-surfaced runways were added and a 3,500-foot turf runway, also a second hangar, the latter for the 109th National Guard Squadron located at the field. The program included the addition of 200 acres to the area of the field. In this 1930 program floodlights were added for illuminating the runways for night landing and take-offs, and boundary lights were also added to outline the field.

The 1938-40 Expansion

The present project, which will be completed by August, 1940, added 80 more acres to the airport, bringing it up to 350, and a total of 2,900,000 cubic yards of fill was added by dredging from the river as a WPA project, costing $2,100,000. The sponsor's contribution was $610,000. A contract was awarded to the Minneapolis Dredging Co., on the basis of the city's furnishing, through WPA, the shore labor for handling the pipe line, and the contractor's furnishing and operating a 16-inch dredge in the Mississippi River with a discharge up to 1 mile in length. A very favorable contract was arranged because of the city's furnishing land labor, and the material was delivered to the site at $0.079 per cubic yard. The dredge was operated six days a week and shut down from 8 A.M. Sunday to 8 A.M. Monday. This work raised the whole northeast part of the field about 6 feet, furnishing ample protection against flooding of the field during high water in the Mississippi River. Before the dredged fill was placed, all the top-soil was stripped from the areas being filled, and stock-piled at the edges of the field for redistribution in the turf areas between the runways after the fills had been completed.

This program also includes the paving of 320,000 square yards of runways and aprons, and the construction of a new administration building. In addition, boundary lights and further floodlighting have been installed for the enlarged field.

To prevent scour along the northeast side of the field where the Mississippi River flows, hand-laid revetment has been placed for about 5,000 feet, covering an area of 14,000 square yards with 5,000 cubic yards of rock up to 75 pounds in weight.

Drainage

The drainage of the new enlarged airport is away from the NW-SE main runway, which is slightly higher than the ground to the northeast and to the southwest. The port is drained to the river at seven places on the northeast side, and on the northwest side it drains through an easement across the Rock Island Railroad right-of-way and to a slough at the south end where the next extension of the No. 2 runway will be made. A total of 16,000 feet of drainage lines have been placed in the airport, of which all up to 18-inch are of vitrified tile, and from 18-inch to 36-inch are of reinforced concrete.

The inlets are brick basins topped with flat rectangular cast iron gratings, measuring 15 by 18 inches, which are installed in multiple lengths as needed to take care of surface water. The entire fill from the river is sand, which drains readily, so that only surface water from the turf which covers the entire field outside the runways must be removed by the drainage system. Sanitary sewers to the St. Paul-Minneapolis Sanitary District sewage-treatment plant serve all the buildings.

The Quarry

All the rock for the runway base, for the revetment and for the construction of the new administration building is from the city-owned quarry, about a 2-mile haul from the airport. The stone is an excellent grade of hard limestone, easily quarried in workable sizes for handloading with relief labor, and for building construction. After drilling and shooting, the stone for crushing is loaded into the five Dempster-Dumpster buckets, which are hauled one at a time by the truck unit to the crusher. Supplementing this new unit is an Oliver 80 rubber-tired tractor and some

ten homemade two-wheeled trailer skips which are also hand-loaded. The trailers are hauled to the crusher, and the rock is fed from two of them at a time into the 24 x 9-inch Universal crusher, the crushed material being taken up by bucket elevator to a flat plate screen. The crushing and screening plant is operated by a 60-hp Case power unit. About 200 men are kept working throughout the year at the quarry on two shifts per day, dividing the time between 6:00 A.M. and 7:30 P.M.

The Paved Runways

There are five runways at Holman Field, the first of which is now part of the concourse in front of the administration building and was originally the old 1,600-foot E-W runway. This was paved with bituminous concrete on a crushed rock base. No. 2 runway is a N-S runway 3,000 feet long, with a possibility of extending it over the present slough at the south end of the field to a total of 7,000 feet. No. 3 runway is the main runway, which has the most favorable winds, and is 5,500 feet long. No. 4 is the NE-SW runway, 3,800 feet long, and No. 5 is the E-W runway, 4,250 feet long. A taxiway connects the apron and concourse at the north end of the field with the ends of the runways at the southeast corner, so that planes can taxi in or out without being forced to use the runways if they are busy.

All the runways are 150 feet wide with a 6-inch crown for drainage and a 4-foot concrete strip 6 inches thick at each edge, included in the 150-foot width, which acts as a retaining strip for the crushed stone base and the asphaltic concrete surface. As will be noted from the photograph of the airport, these also act as excellent outlines or markers for the runways.

The city was confronted with the necessity of economy in runway construction, so chose to use crushed stone from its own WPA-operated quarry. The base is 6 inches of compacted limestone of 5 inches of maximum 2½- to 3-inch stone, finished with stone passing a 1½-inch screen and topped with dust and screenings. It is in effect a waterbound macadam built without the use of water other than that which falls from the skies during construction.

Inasmuch as only during the summer can the coarser rock be placed and rolled satisfactorily to key it with the subgrade, this work was hastened during the summer of 1939, and rolled with a 10-ton tandem and a 12-ton 4-wheeled roller. Then the paving of the base was continued throughout the cold weather even in sub-zero temperatures, with remarkably good results and no base failures.

The binder course, 1½ inches thick, composed of sand and crushed gravel of a maximum 1½-inch size with 4 per cent RC-4 asphalt, has been produced entirely in a temporary plant set up on the field. It consists of a 27-E concrete mixer and suitable oil tanks and pumps. The aggregate is heated by a grid of steam pipes, and the mixer drum is heated by two oil torches, while the asphalt is maintained at the proper temperature by steam from a boiler which also heats the "warming shack" for the workers. The mix was delivered, even during the coldest weather, at a temperature from 110 to 120 degrees. It was quickly hauled to the runways, dumped in place and spread by hand over a measured area per load so that uniformity would be assured. It was rolled in place with an 8-ton and a 10-ton tandem roller.

Most of the surface mixture for topping was supplied by the city asphalt plant at a temperature of 300 degrees. The surface mixture is composed of 48.5 per cent of sand, half and half coarse and fine, 46.7 per cent of buckshot gravel of a maximum ½-inch screen size down to 10-mesh, and 4.8 per cent of asphalt. This work has been done entirely in the warmer months to permit accurate and sufficient rolling of the surface. Some of the mix has been prepared at the plant located on the field and has had the same asphalt content, but cutback has been used instead of paving asphalt, and the temperature has been about 120 degrees for the field-mix material.

Prior to the placing of the 1-inch top surface, a tack coat of 0.2-gallon per square yard of 80 per cent bitumen cut-back was applied to insure a perfect bituminous bond.

PHOTOGRAPH BY F. J. GENG, DIRECTOR, HOLMAN MUNICIPAL AIRPORT

A Recent Photograph from 4,000 Feet, Showing the Progress of Runway Surfacing as of December 1, 1939

Lighting the Airport

The airport, when completed, will have a total of 44 boundary lights with 28 range lights at the ends of runways and in the same series circuit with the boundary lights. Obstruction lights have

been installed on the National Guard hangar, the administration building, the Northwestern Airlines hangar and the municipal hangar. A low-lying railroad telegraph line along the west side of the field with required obstruction lights has since been removed.

There are two 24-inch floodlights at each end of each runway placed off the edge of the runway to prevent the possibility of damage from planes. The airport beacon is mounted on the Indian mounds in the park area on the opposite side of the Mississippi River at the northwest end of the airport, and the code flasher is located on top of the administration building at the field.

Buildings and Hangars

The original municipal hangar, 100 feet square with a lean-to on one side for a machine shop and the original office of the airport, is still in service but could well be enlarged to care for the increasing demand of transient planes for storage and repairs.

The 109th National Guard Aero Squadron has a hangar 220 x 130 feet housing nine observation planes. The Northwestern Airlines has maintained for several years a 220 x 135-foot hangar with a 40 x 60-foot addition for offices. This was constructed by the Airlines under lease arrangements with the city, and has been used as the general overhaul terminal for the Northwestern System and for its general offices. In the spring, as soon as the paving is completed and the lighting installation finished, Northwestern Airlines will include the St. Paul Municipal Airport as a stop on its Chicago-to-the-Pacific Service.

The new limestone administration building contains some very fine stone work, all done by relief labor. In front of the building is a 110-foot radius concourse with five gates to planes using the port. In the basement of the building is a ten- to twelve-car garage, the transformer room for all lighting and other services, the boiler room, a locker room and a kitchen storage room.

The first floor contains a waiting room, two ticket offices, mail, baggage and express rooms, a restaurant and kitchen, a ladies' lounge and rest room, emergency rooms, and a men's rest room and lounge, while the second floor contains the airport manager's offices, and separate offices for the Weather Bureau, the Civil Aeronautics Authority, two rest rooms for ladies, a lounge for pilots and another for stewardesses, and the airways control room. On the roof is an octagonal airport traffic-control tower of structural steel with heavy glass panels permitting clear vision for 360 degrees. On the roof also is the balloon room and a sheltered theodolite stand, and a promenade for visitors.

The entire building is adequately supported on a heavy foundation of wood piling.

Service Rendered

In addition to the new service planned by Northwestern Airlines, at least one other line is expected to start immediate service through this field when the runway paving is completed, in the late spring. Several sightseeing planes, a commercial air-map service and several student training groups are based at the field. In addition, one of the new U. S. Army Student Training Groups is to be established here in the summer.

The transient use of the field increased rapidly last summer in spite of the amount of construction under way, and this has necessitated considerable thought for the extension of this service. Both tank and truck gasoline service are furnished at the field for transient flights. There is a possibility of the construction of a seaplane dock at the north end of the field, with a ramp and a track to the municipal hangar.

In accordance with the most advanced maintenance methods used in northern fields during the winter, the snow is no longer removed from the runways after heavy storms. Instead, it is rolled with a heavy corrugated roller made of corrugated culvert pipe loaded with concrete and pulled by a small Allis-Chalmers tractor. There is no snow-plowing on the field; it is rather the desire to maintain a uniform hard surface for the planes without the piles of snow at the sides produced by plowing, since these are a distinct hazard to planes, which might run off the runway.

Personnel

The St. Paul Municipal Airport, Holman Field, is operated under the direction of William A. Parranto, Commissioner of Public Utilities, with Francis J. Geng as Airport Director. All construction is done under the Department of Public Works, Milton Rosen, Commissioner, and George M. Shepard, Chief Engineer. William Brettschneider is Assistant Engineer, Department of Public Works, acting as Resident Engineer at the airport in charge of construction. The new administration building was designed by Charles Bassford, City Architect.

AISC Standard Specification Adopted by 203 Cities

ACCORDING to the latest compilation made by the American Institute of Steel Construction, 203 cities in the United States have now adopted in their building codes the 20,000-pound unit stress in steel construction—the standard specification recommended by the Institute by formal action in 1936. In addition to the 203 cities that have adopted the standard, 148 other cities permit its use without so specifying in their codes. This increased working stress reduces the amount of steel going into a building and thereby effects greater economy in construction costs. It was made possible as a result of the improved quality of steel now being rolled.

Among the cities that have adopted or permit the 20,000-pound unit stress are San Francisco, Los Angeles, Indianapolis, Kansas City, New Orleans, Cincinnati, Dallas, Houston, Fort Worth and Galveston. In Chicago, Boston, New York and Philadelphia, the 18,000-pound unit stress is still used. The Institute, 101 Park Avenue, New York, has issued a pamphlet listing all cities and states which have adopted the AISC standard specification.

Bangor's Annual Report Tells a Story That the Citizens Can Understand

THE municipal activities of Bangor, Maine, for the year 1939, what they cost, and how that cost was met, are clearly presented in a 50-page report, published last month, that attracts interest and appeals to intelligence. Excellent typography, fine photographs, understandable graphs and charts, enhance the value of the brief classified descriptions of what the city is and does. The citizens are brought into close touch with their privileges and responsibilities, and with recommendations for the development and improvement of the city.

The President of the Council is Frank O. Youngs, and the City Manager, by whom the report was compiled and edited, is James G. Wallace. Each department has its place in the report. The Public Works Department, for example, is represented by park reconstruction, improved streets, and sidewalk reconstruction, by the keeping of all streets and roads open for travel during a long, difficult season of snow and ice removal, and increased sanding of streets. Among the evidences of the city's planning for the future the report includes two plans of new school playgrounds, one already under construction.

Certain features of the report's method of direct interest are reproduced on this page. "He who" reads will not wish to "run," but will pause to get the varied message presented in the analysis of this forward-looking council-manager city.

Who Pays the Real Estate and Personal Taxes in Bangor?

$50 or less 40.4%

$51—$100 21.9%

$101—$200 22.6%

$201—$300 6.0%

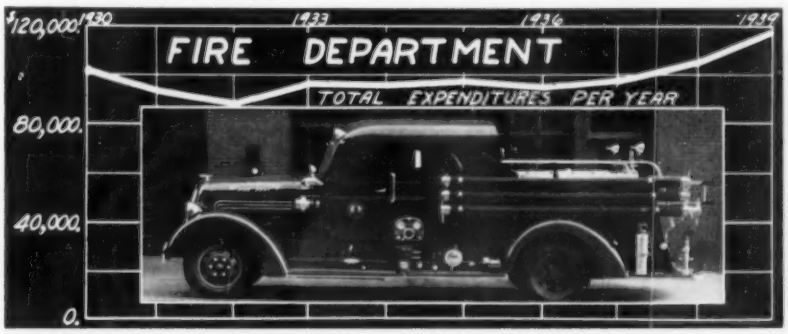
$301—$400 2.8%

$401—$500 1.0%

Over $500 5.3%

Total 100%

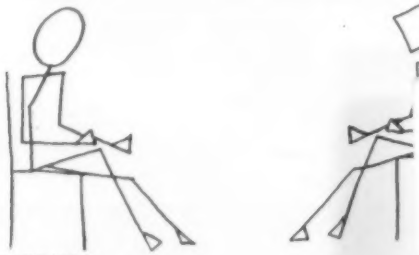
Percentages indicate number of taxpayers in each group compared to all taxpayers



Each chart in the Bangor report tells a graphic story

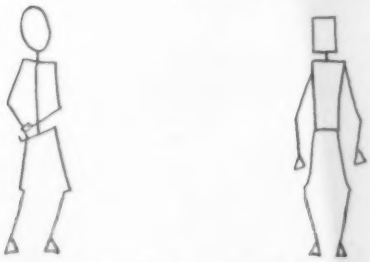
Mr. Taxpayer, Complainant, Confers with Mr. Public Servant, Explainant

FOLLOWING are a few examples from the conversation which the Escanaba, Mich., taxpayer has with the Escanaba public official, in a recent report, "Development of Municipal Services,"—a conversation which any taxpayer might have with the municipal official, in any city. These cartoons are on the left-hand pages of the report. The public servant explains tables, charts and graphs on the right-hand pages, which list officials and services, show tax trends, relief costs, bond payments, where the tax dollar goes, fire losses, facts about the municipal utilities and water department, etc.



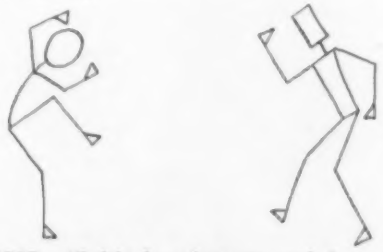
MR. TAXPAYER:
A heavy load I have to bear
Of taxes high and charge unfair.
Our public servants rob me blind,
And when I pay I'm apt to find
My money squandered. It need not be.
So why is it? Can you tell me?

MR. PUBLIC SERVANT
Mr. Taxpayer, if you w
From your own work to f
Of load unjust and charg
Submitted are a few facts
For your persual. I thin
It's possible you have beer
But not from robbery. L
What can be done to end
By separating the "am" fr



MR. TAXPAYER: It seems to me that local government ... complicated. I am always sent from one department to another for information or service.

MR. PUBLIC SERVANT: Any organization which gives the wide variety of services expected by the people of local government is apt to become something more than simple in its organization. Further, it demands highly trained employees for its successful operation. Listed here are the responsible heads of departments and their relation to the City Manager and the Council. As to information and service, a study of the next page will help.



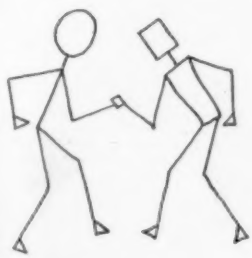
MR. TAXPAYER: All right, how about some service?

MR. PUBLIC SERVANT: Listed here in separate blocks are the services and information most demanded by citizens. The telephone number is given for each class of service. City employees are expected to give courteous service and are not permitted to accept favors of any kind. You can help by dealing with them pleasantly. They get quite a bit of abuse. Discourtesy should be reported to the Manager.

PAG

MISS

... unemployment and relief. Only when conditions improve will the pressure be relieved. The special assessment bond money was also spent in the interests of the unemployed, but the property owner received full value for the expenditures.



MR. TAXPAYER:
Well maybe you are not so bad
But guard your step, Sir Galahad.
I'm watching you at every point.
If you go wrong I'll wreck the joint.

MR. PUBLIC SERVANT:
If I go wrong 't will be your fault.
Public service incompetence will only halt
When you taxpayers have learned to see
Your own part in Democracy.

Tax-Delinquent Subdivisions

A Liability That Might Become a Municipal Asset

By Edmund N. Bacon

THERE is an important relation between the land policies of cities and their tax structure. The combined private and public land policies in the past have

GES

SING

following is a brief summary of the survey report.

Of the total 64,000 subdivided lots within the city limits, 28,000, or 44 per cent, are vacant. These

are miles and
lt completely
Throughout
scattering of
es occupying
al lots in the
thers as little
ng the estab-
he condition
nes the char-
orhood, and
of the inter-
ve find that
s sprinkled
cant area are
as to have
tire land re-
racter of a
d. The re-

sult is a trend of migration outside the city limits. The Building Inspector's records show that in the period from 1930 to 1937 only 950 new houses were built within the city, or 4,000 less than necessary to replace obsolescence on existing structures. During the same period over 2,000 houses were built just outside the city limits, causing a loss to the city of over $2,000,000 potential assessable value.

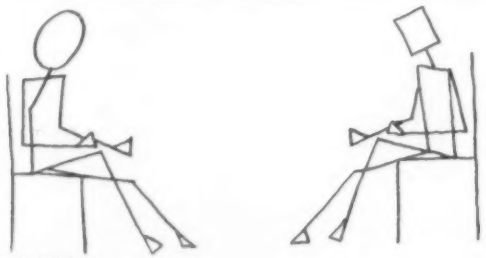
This migration continues despite the existence of 20,000 vacant parcels within the city limits supplied with both sewer and water lines provided at a cost of over $3,000,000, including the cost of streets. (See Map No. 1.) Of the $11,000,000 spent by the Public Works Department for sanitary and storm sewers since 1915, 49 per cent was raised by general city obligation bonds, 39 per cent was contributed

DATA OBTAINED BY WPA LAND USE SURVEY FROM RECORDS OF THE CITY ENGINEER AS OF AUGUST, 1938

Map No. 1, at left—The black areas indicate vacant subdivided lots within the city limits of Flint, Mich., which are supplied with sewer and water lines. Map No. 2—The black areas indicate vacant parcels within the city limits of Flint, Mich., which were delinquent on taxes prior to 1935, and reverted to the state for lack of private bids at the May, 1938, tax sale

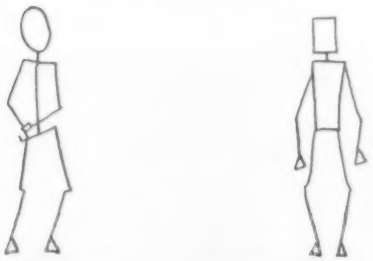
Mr. Taxpayer, Complainant, Confers with Mr. Public Servant, Explainant

FOLLOWING are a few examples from the conversation which the Escanaba, Mich., taxpayer has with the Escanaba public official, in a recent report, "Development of Municipal Services,"—a conversation which any taxpayer might have with the municipal official, in any city. These cartoons are on the left-hand pages of the report. The public servant explains tables, charts and graphs on the right-hand pages, which list officials and services, show tax trends, relief costs, bond payments, where the tax dollar goes, fire losses, facts about the municipal utilities and water department, etc.



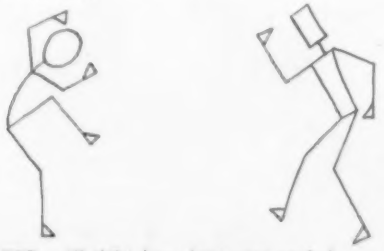
MR. TAXPAYER:
A heavy load I have to bear
Of taxes high and charge unfair.
Our public servants rob me blind,
And when I pay I'm apt to find
My money squandered. It need not be.
So why is it? Can you tell me?

MR. PUBLIC SERVANT:
Mr. Taxpayer, if you will pause
From your own work to find the cause
Of load unjust and charge unfair,
Submitted are a few facts here
For your persual. I think you'll find
It's possible you have been blind,
But not from robbery. Let us see
What can be done to end complaint
By separating the "am" from "ain't."



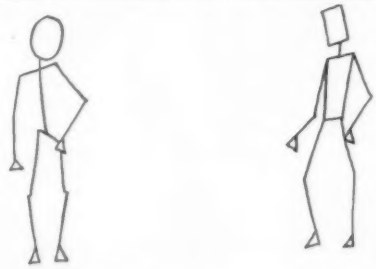
MR. TAXPAYER: It seems to me that local government is unduly complicated. I am always sent from one department to another for information or service.

MR. PUBLIC SERVANT: Any organization which gives the wide variety of services expected by the people of local government is apt to become something more than simple in its organization. Further, it demands highly trained employees for its successful operation. Listed here are the responsible heads of departments and their relation to the City Manager and the Council. As to information and service, a study of the next page will help.



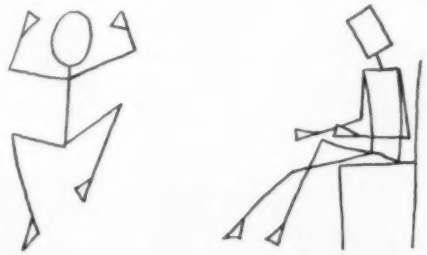
MR. TAXPAYER: All right, how about some service?

MR. PUBLIC SERVANT: Listed here in separate blocks are the services and information most demanded by citizens. The telephone number is given for each class of service. City employees are expected to give courteous service and are not permitted to accept favors of any kind. You can help by dealing with them pleasantly. They get quite a bit of abuse. Discourtesy should be reported to the Manager



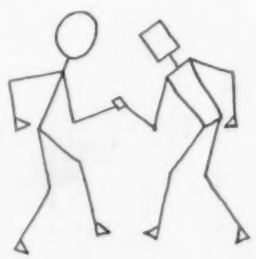
MR. TAXPAYER: Now we're getting to something. I'm always interested in taxes. They are always too high.

MR. PUBLIC SERVANT: The dotted line shows the present assessed valuation, tax levy, and tax rate. You should note that, while the population of the city has gone up 2,000 since the Council Manager form of government was inaugurated, the valuation, tax levy, and tax rate have all gone down, in spite of the difficult times.



MR. TAXPAYER: What is done with all this money coming from utilities and taxes? Is there never to be any let-up?

MR. PUBLIC SERVANT: When other organizations have troubles and fail, the government must take over. A glance at the chart opposite shows what happened when acute unemployment hit the city. In 1932 more than the entire tax levy was spent on unemployment and relief. Only when conditions improve will the pressure be relieved. The special assessment bond money was also spent in the interests of the unemployed, but the property owner received full value for the expenditures.



MR. TAXPAYER:
Well maybe you are not so bad
But guard your step, Sir Galahad.
I'm watching you at every point,
If you go wrong I'll wreck the joint.

MR. PUBLIC SERVANT:
If I go wrong 't will be your fault.
Public service incompetence will only halt
When you taxpayers have learned to see
Your own part in Democracy.

Tax-Delinquent Subdivisions

A Liability That Might Become a Municipal Asset

By Edmund N. Bacon

THERE is an important relation between the land policies of cities and their tax structure. The combined private and public land policies in the past have produced some 30,000,000 vacant lots in the United States, and tax delinquency on these parcels seriously affects municipal income. Many other important underlying trends result from this land situation. A recently published WPA Land Use Survey of Flint, Mich.,* points out some of these trends and suggests a possible solution. The following is a brief summary of the survey report.

Of the total 64,000 subdivided lots within the city limits, 28,000, or 44 per cent, are vacant. These cover an area of 5 square miles and lie in a peripheral belt completely surrounding the city. Throughout this belt there is a scattering of homes, in some places occupying 50 per cent of the total lots in the subdivisions, and in others as little as 8 per cent. Applying the established principle that the condition of the houses determines the character of the neighborhood, and therefore the use value of the intervening vacant lots, we find that most of the houses sprinkled through this largely vacant area are in such bad condition as to have stamped almost the entire land resources with the character of a blighted neighborhood. The result is a trend of migration outside the city limits. The Building Inspector's records show that in the period from 1930 to 1937 only 950 new houses were built within the city, or 4,000 less than necessary to replace obsolescence on existing structures. During the same period over 2,000 houses were built just outside the city limits, causing a loss to the city of over $2,000,000 potential assessable value.

This migration continues despite the existence of 20,000 vacant parcels within the city limits supplied with both sewer and water lines provided at a cost of over $3,000,000, including the cost of streets. (See Map No. 1.) Of the $11,000,000 spent by the Public Works Department for sanitary and storm sewers since 1915, 49 per cent was raised by general city obligation bonds, 39 per cent was contributed

* The major portion of this report was published in the *Journal of Land and Public Utility Economics*, February, 1940. Reprints, including three additional neighborhood studies, may be obtained from Edmund N. Bacon, 2021 Chancellor Street, Philadelphia, Pa., for 25c. This report was authorized and approved by a city planning board no longer existing. It has never been officially reviewed nor approved by the present City Planning Commission, so it cannot be said to represent any officially adopted policy of the city.

DATA OBTAINED BY WPA LAND USE SURVEY FROM RECORDS OF THE CITY ENGINEER AS OF AUGUST, 1938

Map No. 1, at left—The black areas indicate vacant subdivided lots within the city limits of Flint, Mich., which are supplied with sewer and water lines. Map No. 2—The black areas indicate vacant parcels within the city limits of Flint, Mich., which were delinquent on taxes prior to 1935, and reverted to the state for lack of private bids at the May, 1938, tax sale

Rolling down to RIO

International Trucks and Tractors Cut Costs and Save Time on Gigantic Water Conductor Project

All set to go! A new load every few minutes.

International TracTracTors clear and grade the right-of-way.

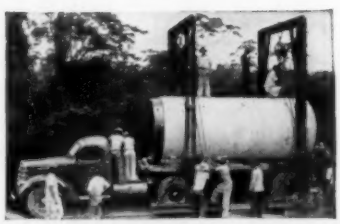
Brazil moves ahead on its march of progress, with a 60-mile aqueduct under construction to bring water to beautiful Rio de Janeiro. Thirteen thousand 22,000-lb. iron and concrete tubes will carry the water. The great project demanded the best in engineering skill and equipment.

International Trucks and Diesel TracTracTors "rolled down to Rio" and went to work for Dahne, Conceição & Cia. (Adductora Ribeirão Das Lages S. A.), clearing, grading, and preparing the right-of-way; transporting tubes, materials, and supplies; and easing the heavy tubes into the trench.

Thanks to the ability of 18 International Trucks and 9 International Diesel TracTracTors, a great city's dream becomes reality!

The world is dotted with such International records. If *you* have a truck or tractor job to do, there's a powerful International that's built and styled for *your* work. Ask the nearest International Dealer or Company-owned Branch for a demonstration.

INTERNATIONAL HARVESTER COMPANY
(INCORPORATED)
180 North Michigan Avenue Chicago, Illinois



Rapid and careful unloading of tubes by chain-hoist system.

Easing 22,000-pound tubes into place. No cracks, no damage!

INTERNATIONAL TRUCKS

by the WPA, and only 20 per cent came from special assessments. Thus the public has a heavy stake in these lands.

The City Pays and Pays

The migrant family moves into the new, unsewered subdivisions outside the city, expecting to enjoy lower taxes. The many families which follow in its wake require the installation of new sewers, water mains and schools, and the tax rate goes up accordingly. This abandonment of thousands of expensively serviced lots within the city, and endless movement over a larger and larger area, and the consequent necessity for expenditure of yet greater sums for utilities, represents a serious waste of public funds.

This situation has a profound bearing on the tax structure. The resulting spread-out condition of the city, and dilution of occupied areas by vacant lots, greatly increases the cost of many current city services. Of the 527 miles of street in Flint, 200 miles pass vacant lots. This obviously increases the cost of garbage collection, fire and police protection, and street maintenance. More serious—if the migration is accelerated by the imminent obsolescence of thousands of unfit homes, the city will soon face a critical depopulation.

Since there is little prospect of the private marketing of the bulk of these vacant lots, the owners tend to cease tax payments, and in many cases have virtually abandoned the land. Vacant lots to the number of 12,000, delinquent on taxes prior to 1935, have reverted to public ownership following the 1938 tax sale, because there were no private bidders for them. (See Map No. 2.) Of these, 9,000 were supplied with utilities. They would be sufficient for the building needs of Flint for many years to come.

It is the expressed policy of the State Legislature that the city will have to take a loss on the back taxes on this land, in Flint amounting to $2,700,000, or enough for the entire operation of the city for a year and a half. The law provides that the parcels unsold at the original tax sale shall again be offered at a "scavenger sale" two years following, and sold for any bid over 25 per cent of the assessed valuation, and later may be retrieved by the original owner for a down payment of 10 per cent of the bid. What this does in effect is to surrender the public equity in the land and return it, virtually stripped of taxes, to the original owner, who will remain as powerless as before to make it productive to the city or to anyone, owing to neighborhood factors beyond his control. The only way to restore value to the individual lot is to reassemble ownership in large areas, clear away the neighborhood factors causing blight, replan and rehabilitate the area, and again offer it to private builders on condition that it be developed according to sound neighborhood planning principles.

Rescue Through Municipal Land Reserves and Redevelopment

The public, through its involuntary ownership of huge tracts of this land, finds itself automatically in position to do this very thing, which would be virtually impossible for private enterprise. In one desirably located ten-block area studied, 70 per cent of the parcels had reverted to public ownership for tax delinquency. There was an average of but two houses per block, and several of these were in extremely poor condition. If the city were given title free and clear to the tax-delinquent land, and the necessary powers to rehabilitate the area, it could create very desirable land values here which should be thoroughly attractive to private builders on a sale or lease basis. As things now stand, this area is permanently ruined by undesirable scattered development.

A thorough, planned application of this principle may become the means not only of solving the tax-delinquent land problem, but also of attacking the underlying tax problems as well. If the many desirably located and largely delinquent areas close to the city center were systematically rehabilitated as they were needed, the newly created values should be a positive force, influencing the location of new building. This should tend to reverse the trend of migration outside the city limits, thereby building up the total assessed valuation of the city, and it should also tend to reduce the spread-out development as obsolete homes in the scattered outlying subdivisions are replaced closer in. The most delinquent and most sparsely settled outlying subdivisions may eventually be acquired by the city in toto, and returned to productive agricultural use or municipal forests, thereby reducing the area requiring city services, and consequently lowering city operating costs.

The program as outlined raises many legal and constitutional questions as yet unanswered. It would demand the effective cooperation of the City Planning Commission, the Housing Commission, the planned application of all existing regulatory devices, and a planned public works program. It deals with perhaps the most fundamental problem facing many cities, the solution to which may well lie in the intelligent use of tax-delinquent land as a municipal land reserve.

Bigger Fire Year in New York City

NEW YORK CITY'S FIRES OF 1939 totaled 32,454 compared with 26,819 in 1938. With 21 per cent more fires, the loss is up 9.2 per cent, the total amounting to $8,600,544.

Fatalities totaled 119, with 467 injured, against 1938 figures of 113 and 414. The number of fires of proved incendiary origin was the same in both years—126. The number of suspicious fires was 211 last year against 161 the year before, a rise of 24 per cent. Arrests for arson increased 25 per cent, and there were 46 convictions.

More than 20 per cent, or 9,286, of last year's 44,698 fire alarms were false. One fire in a thousand spread to adjoining buildings after the arrival of fire apparatus.

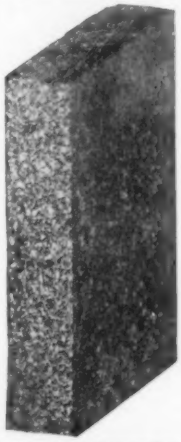
During 1939 the Fire Department purchased six 1,000-gallon pumping engines and four 85-foot aerials from Ahrens-Fox Fire Engine Co., eight hose wagons from Mack Manufacturing Corporation, and a rescue truck. For a more extensive description of the work of the New York City Fire Department, see the article on page 61 of the March, 1939, issue of THE AMERICAN CITY.

ROAD CONDITIONING PRODUCTS

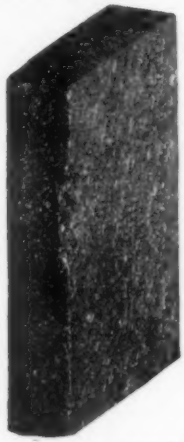
Expansion Joints and Planking

Asphalt Expansion Joint

Cork Expansion Joint



Cork Rubber Expansion Joint



Fibre Expansion Joint

Self-Conditioning Joint

Six Reasons Why SERVICISED Self-Adjusting Joint Is Better:

1. The asphalt ribs on the Self-Adjusting joint contact when the water seal is most important, nor can this compound ooze from the crevice.
2. The asphalt rib enables the product to fill the opening 100% at all times.

Servicised Self-Adjusting Joint

3. Compression intensifies resistance to inflow of moisture.
4. Recovery is aided by mechanical means ever-present and ever-functioning.
5. Uniform impregnation of the fibre with a non-sticky waterproofing material prevents adhesion of the fibre structure upon compacting.
6. Much less breakage due to handling because of reinforcement of the asphalt ribs.

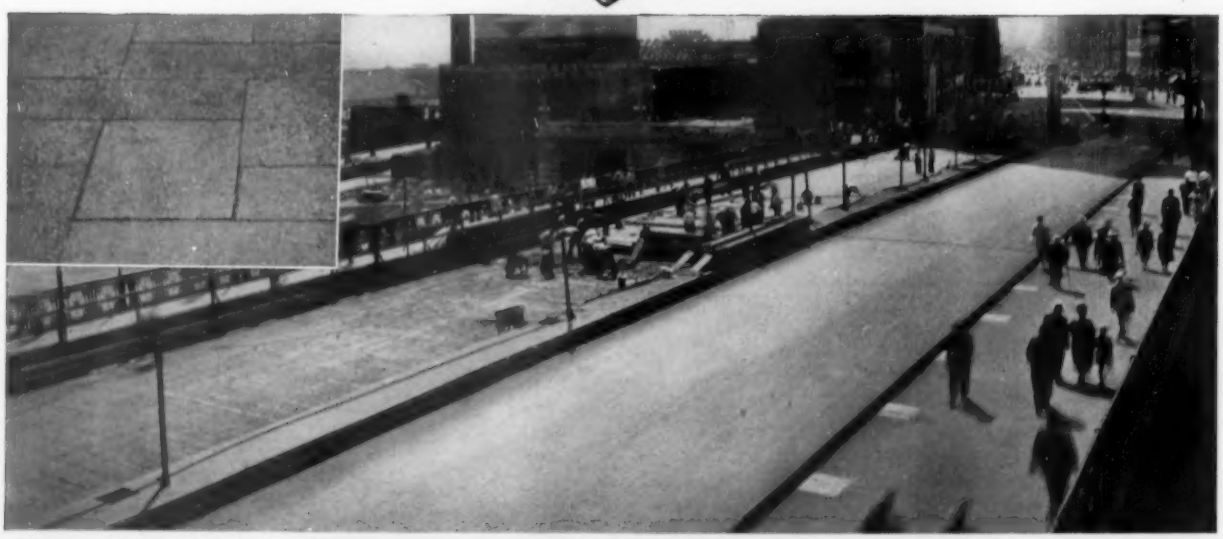
SERVICISED PRODUCTS CORP.

MANUFACTURERS AND ENGINEERS

6051 West 65th St.

REPRESENTATION IN PRINCIPAL CITIES

Chicago, Illinois



Michigan Ave. Bridge, Chicago. Servicised Rock-surface Non-skid Plank protects traffic on this highly important artery. Servicised Standard Plank provides the wearing surface for pedestrian traffic. Inset: Detail Mineral Rock surface Planking.

Pontiac Goes Safe

By W. P. Edmonson
City Manager, Pontiac, Mich.

Hats Off to Police, Citizens and Parking Meters

LAST year, traffic fatalities in the city of Pontiac dropped 81.8 per cent below those of 1938, the best record of fatality reduction in the nation, according to the Bureau of the Census. As a matter of fact, there were only two fatalities—a seven-year-old boy and an old man who stumbled in front of a car—compared with eleven fatalities in 1938.

For this record, of which we are all so proud, Police Chief Charles F. Rhodes merits much credit, and he passes a substantial lump of it along to Sergeant Edward Shigley and his assistant on accident prevention, Patrolman H. H. Hatfield. Two years ago, Sergeant Shigley was told to reduce accidents, in addition to his regular investigation of accident cases. Last year, a large clocklike accident barometer was placed in front of the Court-House.

To make citizens safety-minded, a Citizens' Safety Council was organized to cooperate with the police. An inter-church contest for safe driving was held, and an honor plaque was awarded every three months. A drivers' school was opened for all applicants for drivers' licenses. Driving instruction was given in the junior high schools. Officer Hatfield started traffic classes in the primary schools, to teach safe walking and bicycle riding.

One of the most interesting features was the organization of school traffic courts, with the safety patrol boys as policemen, and elected judges, prosecutors, bailiffs, and court clerks. Printed tickets summoned violators of the school traffic code, and defendants were entitled to counsel. Offenses included jaywalking, ignoring traffic signals, riding two on a bicycle, walking on lawns. Sentences included staying after school and copying the traffic code rules.

A school for women drivers was held in cooperation with the city's Federation of Women's Clubs, with a ten-week lecture course and two hours behind the wheel of a dual control car furnished by the Pontiac Motor Co.

The last of numerous 1939 slogans placed on the clock was: "There is only a fraction of a second between an ordinary accident and death." In 1938 one in 21 injury accidents was fatal; in 1939 one in 127 was fatal. Nothing succeeds like success; there are now three men in the accident prevention bureau.

We believe that parking meters have done a great deal to encourage automobile owners to observe traffic rules. On April 6, 1939, we started operating 385 Dual Automatic meters in the business section. On November 6, we installed 30 additional meters, making a total of 415. These meters make it possible for our citizens and visitors to find convenient parking spaces, and everyone is treated fairly.

TABULATION OF PARKING METER COLLECTIONS AT PONTIAC, MICH.

	Month	Days Operating	Amount	Slugs Value	Meters Operating	Meter Days	Meter Average Per Day
1939	April	21	$3,047.10	$2.80	385	8,076	$.377
	May	26	3,738.15	1.35	385	9,968	.375
	June	26	3,689.16	1.10	385	10,010	.368
	July	25	3,470.21	1.00	385	9,624	.361
	August	27	3,678.48	.90	385	10,395	.354
	September	25	3,589.16	1.30	385	9,586	.375
	October	26	3,615.36	.75	385	10,010	.361
	November	25	3,614.90	1.80	415	10,195	.355
	December	25	3,996.48	1.10	415	10,369	.385
1940	January	26	3,464.30	1.25	415	10,790	.321
	February	25	3,458.26	1.10	415	10,375	.333
	Total	277	$39,361.56	$14.45	415	109,398	$.359

That the meters are popular is shown by their large and steady earnings, ranging from 38.5 cents per meter per day in November and December, 1939, to 32.1 cents in January, 1940. For the 10 months the meters collected $35,903, including only $13.35 in slugs. The 3 months' experience with the 30 additional meters is even more gratifying. The daily average per meter was 37.7 cents for November, 45.9 cents for December, 39.1 cents for January, an average of 41.1 cents. The total collections for the 30 meters in the 4 months was $1,164, including slugs representing only 50 cents.

Congested parking not only invites accidents at the curb, in the process of getting parked, and in the business streets, but the trouble and annoyance are not conducive to safety-mindedness. In orderly parking, on the other hand, there is dignity and calmness, which are important factors in safe driving.

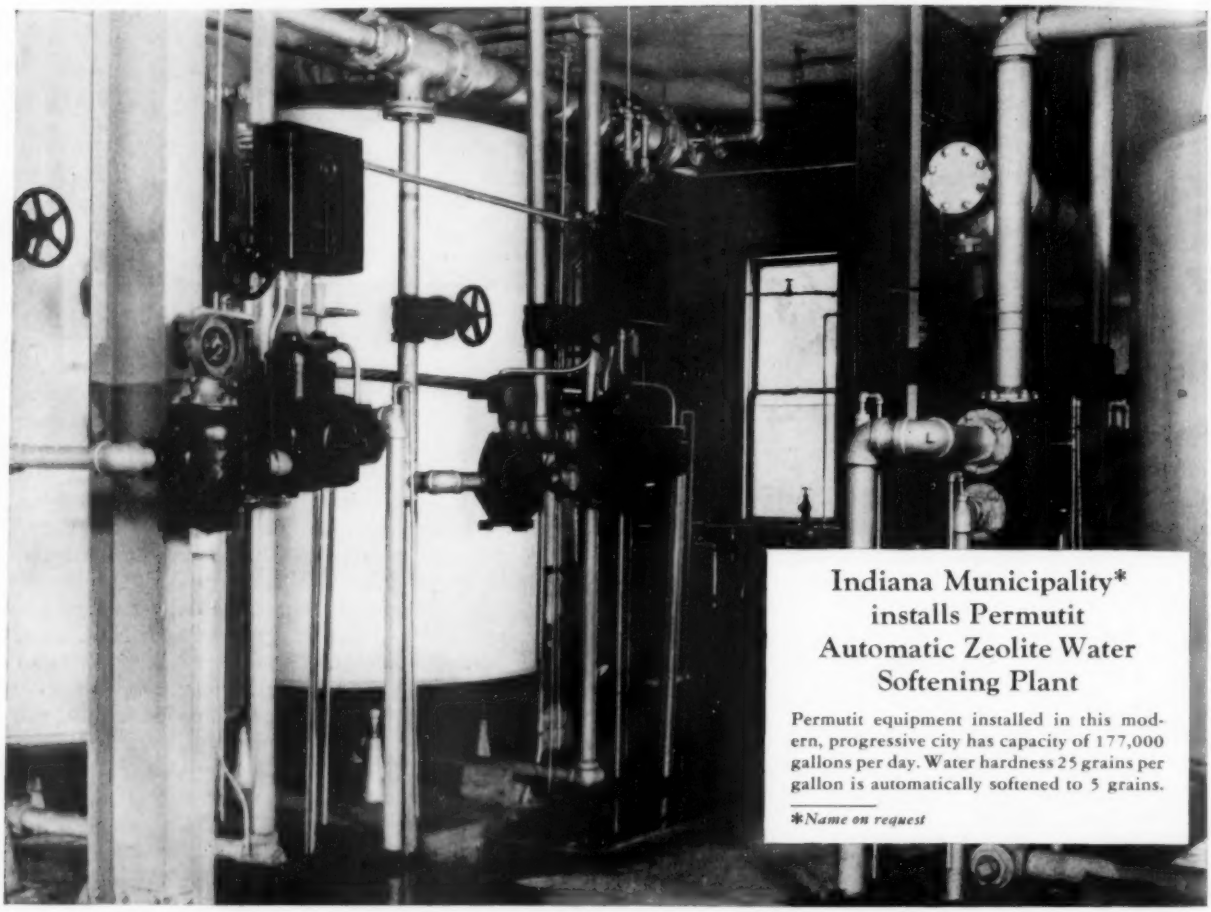
To Install Turbine Generator Outdoors

THE FIRST HYDROGEN-COOLED turbine-generator for outdoor installation is being built by the General Electric Co. for a new station at the city of Glendale, Calif. The boilers and firing aisle are to be enclosed with stucco-covered light-steel frame housing, and the turbine-generator unit will be located upon an open deck and served by a traveling gantry crane.

There is no reason why turbine-generators cannot be installed outdoors in any part of the country, says R. S. Neblett, Assistant Manager of the manufacturer's Turbine Division. "Hydrogen-cooling makes the outdoor installation of turbine generators a practicability." Such machines are completely self-contained, and are hydrogen-tight and air-tight, making their operation independent of weather.

Rated 20,000 kw, 13,800 volts at 3,600 rpm, the unit will operate at 0.8 power-factor and have a total output of 25,000 kva. It will use steam at 600 pounds gage pressure, with a back pressure of 2 inches of mercury absolute. August shipment planned.

Another City NOW HAS SOFT, IRON-FREE WATER!



Indiana Municipality* installs Permutit Automatic Zeolite Water Softening Plant

Permutit equipment installed in this modern, progressive city has capacity of 177,000 gallons per day. Water hardness 25 grains per gallon is automatically softened to 5 grains.

**Name on request*

Permutit Automatic Municipal Zeolite Water Softener

Perhaps the biggest single feature of Permutit Water Softeners—the feature that appeals to large and small cities alike—is automatic operation. Units regenerate and backwash themselves, releasing the plant attendant for other duties.

Automatic operation also saves on salt used for regeneration, accurate control eliminates the chance for human error. The equipment above, installed in 1939, illustrates the compact, modern simplicity made possible by automatic control.

★ ★ ★

The number of cities enjoying Permutit water conditioning is steadily increasing. How about *your* city? For further information on installation shown, booklets on municipal water conditioning, free water analysis, or advice on any water conditioning problem, address The Permutit Company, Dept. G 3, 330 W. 42nd St., New York.

PERMUTIT

WATER CONDITIONING *Headquarters*

ZEOLITE WATER SOFTENERS

SPAULDING PRECIPITATORS • IRON REMOVAL EQUIPMENT

During April we hope you will remember to mention THE AMERICAN CITY.

Small-Town Zoning for Two-Family Houses

By Henry G. Atwater
Chairman, Westfield, N. J., Planning Board

WESTFIELD is a residential suburb 20 miles from New York having an estimated population of a little less than 20,000. The community has been characterized by a high percentage of owner-occupied homes, and apartment houses have not been favorably regarded.

The town has a zoning ordinance which defines areas for one-family houses, two-family houses, commercial business, and industry. It has a zoning Board of Adjustment which hears applications for non-conforming uses of property. A recommendation by the Board of Adjustment, adopted by the Town Council, to permit a non-conforming use of property, in effect reclassifies that particular property as being in a zone in which such use is permissible under the zoning ordinance. The town also has a Planning Board, which, however, does not have the powers of a zoning board.

Extension of Two-Family Zone

Recently it was desired to extend the zone in which two-family houses are permitted. The matter was separately considered by a committee of the Town Council, the Board of Adjustment, and the Planning Board, following which representatives of these three groups held a joint meeting and agreed upon a recommendation to the Town Council.

When the matter was under consideration by the Planning Board, the writer endeavored to find some literature that might serve as a guide telling how the subject should be approached, what data would be significant, and generally how to go about the job of preparing a recommendation. He found a considerable amount of writing but, perhaps owing to lack of familiarity with such literature, found very little that was helpful and did not find the desired rules of procedure. So he worked out something as best he could in a short time. This article is based on a memorandum prepared as an aid to the three Westfield groups at their joint meeting. The meeting also had before it a specific suggested extension to the two-family zone, which is here referred to as the suggestion of December, 1939.

Factual Data Needed

In considering any change in a zone it would be desirable to have some factual data. In this case, obviously it would have been desirable to know the number and location of all existing two-family houses. No such record was available, though a reasonably accurate record might have been compiled from the tax collector's records. However, a lengthy study was not possible, and for a brief study it seemed sufficient and to the point to examine records that would give a measure of the current demand for two-family houses, and the locations from which the demand came. To get this, the minutes of meetings of the Town Council and of the Board of Adjustment, both of which bodies had acted on applications to convert one-family dwellings for dual occupancy, and also the Building Inspector's record of permits issued, were reviewed for the four years 1936 to 1939 inclusive. It was realized that these data would be incomplete because only formal applications are recorded. Informal applications are not recorded, and many potential applications do not even reach an informal stage, because owners assume that such an application would be denied. Nevertheless, the data secured are significant and are tabulated above:

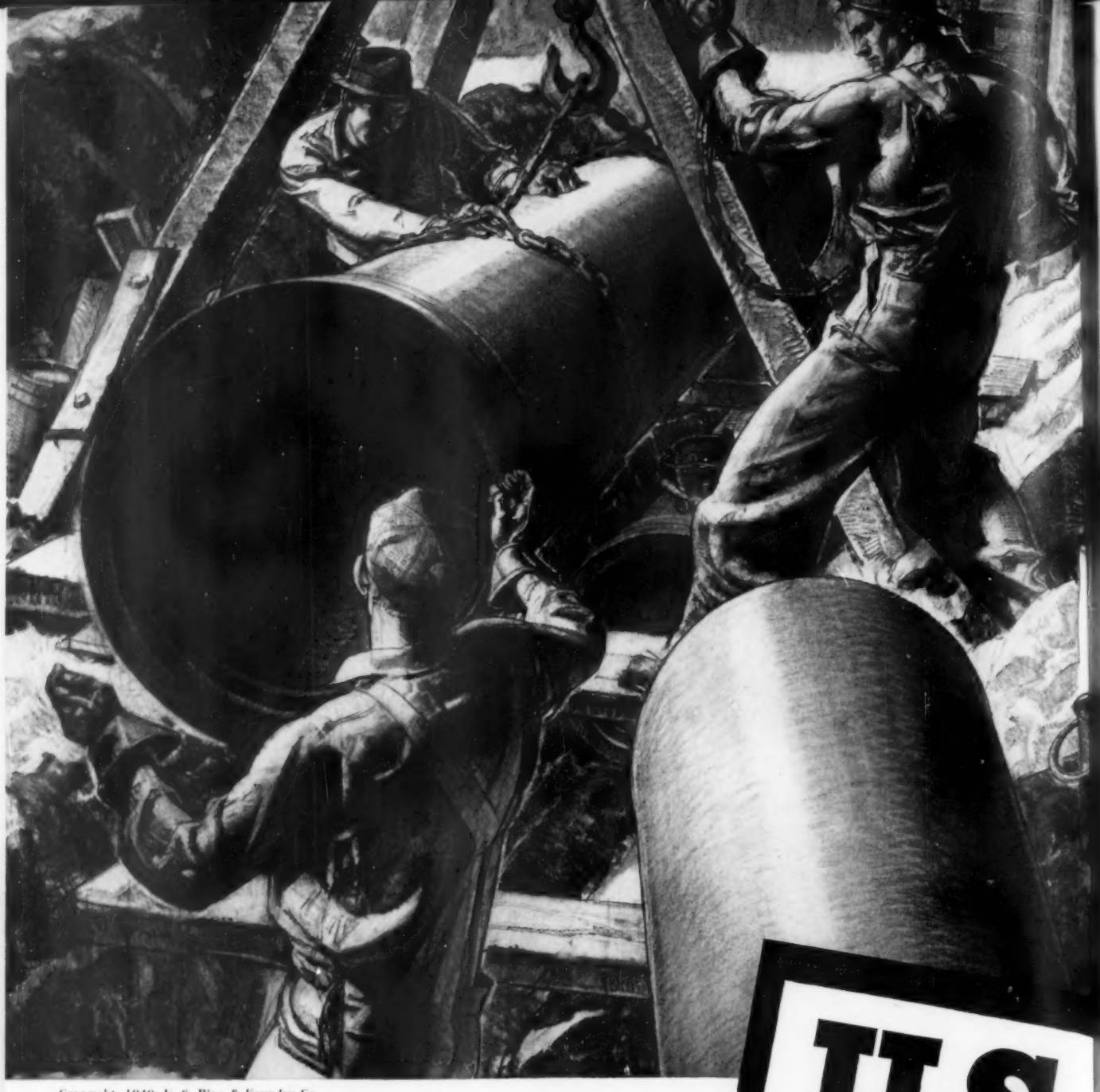
Recorded Applications for Two-Family Houses

Four Years, 1936-1939 Inclusive

Area from Which Application Originated	*Applications Total*	*Granted*	*Denied*
Two-Family Zone			
Effective prior to May, 1938	0	0	0
The addition of May, 1938	11	11	0
One-Family Zone			
Suggested for two-family zone Dec., 1939	10	3	7
Remainder of one-family zone	14	7	7
Totals	35	21	14

Prior to May, 1938, the two-family zone was rather limited. The substantial addition made some two years ago took care of about one-third of all recorded applications during the four-year period, and almost another one-third originated from the addition suggested in December, 1939. The remaining fourteen cases, being 40 per cent of all cases recorded during the period, were from locations outside the two-family zone and outside the area suggested in December, 1939, for inclusion in that zone.

On examination of the locations from which these fourteen cases came, it was evident that more than half of them were in blocks suffering from, or clearly threatened with, social and economic decay. These blocks no longer attract resident owners of the social and economic levels that owned and occupied the houses a generation or more ago, although a number of the old-time residents still remain. Many of the properties lack adequate maintenance. Regardless of maintenance, the properties suffer from obsolescence. The exterior architecture, the inside arrangement of rooms, the absence of modern improvements, whether playrooms in the cellar, lavatories on the ground floor, insulation under the roof, or other features, are not in the present mode for new structures. The older the structures, the more serious the obsolescence. The houses in these blocks have an average age of perhaps fifty years. Some are much older. Those houses that have been modernized from time to time have some modern parts but obviously they still are old houses, not competitive with modern buildings. Sales values in these blocks have



Copyright, 1940, U. S. Pipe & Foundry Co.

CAST IRON pressure pipe for underground service has a useful life of one hundred years. This is virtually an engineering axiom applying to *all* cast iron pressure pipe since all of it is made to specifications. But specification products can have plus-values, as in the case of Super-de Lavaud *chill-free* centrifugally cast pipe. This pipe, made by a special process, combines extraordinary impact-resistance with great strength and ductility.

U.S. cast iron PIPE

Centrifugally or Pit Cast for water works, gas, sewerage, drainage and industrial services.

U. S. PIPE & FOUNDRY CO.
General Offices, Burlington, N. J.

Plants and Sales Offices throughout the U. S. A.

depreciated relative to the general Westfield real estate market.

Such areas are said to be "blighted." In general, the blocks in which blight is found are the oldest residential blocks, close to the business area or to settlements of racial or national groups, and as these areas expand, the surrounding blighted areas will form an ever enlarging circle.

The Apartment-House Problem

To protect taxable values and to protect the character of a neighborhood are both responsibilities of a zoning authority. Sometimes this dual responsibility is not appreciated in the treatment of blighted areas. For example, to increase taxable values, a governing body may grant a permit for an apartment house in a town where public demand for apartments could as well have been met by a desirable extension of the two-family zone. Of course such an apartment house is in direct competition with apartments in the older houses already zoned, or that should be zoned, for dual occupancy. The result is an actual reduction instead of an increase in taxable values, because the competition hastens the economic decay of many scattered dwellings and this in turn hastens the destruction of taxable values in whole blocks and neighborhoods. This also depreciates the appearance of the older residential areas which all towns should endeavor to protect. Comparison of conditions in towns where apartment-house competition has been fostered and in towns where emphasis has been directed to the best possible use of existing dwellings, will clearly illustrate the effect of apartment-house competition.

Prior to May, 1939, the two-family zone included about 70 houses, while the addition to the area at that time and the further addition suggested in December, 1939, each included about 140 houses, so the total proposed two-family area would include about 350 houses, a little more than 7 per cent of the estimated 4,800 houses in Westfield.

Realtors Interviewed

To check general statements that married sons and daughters were moving from Westfield because no suitable rentals were available, a half-dozen of the principal realtors were interviewed to learn their opinions, which are summarized as follows:

1. There is urgent demand for two-family rentals.

2. The need, in the order of demand, is for apartments of (a) 4 rooms and bath, (b) 3 rooms and bath, (c) more than 4 rooms and bath, and (d) 2 rooms and bath; (a) and (b) being in much greater demand than (c) and (d).

3. There is but little objection to small rooms.

4. Proximity to the depot and retail stores is very important.

5. The price range is, in general, from $30 or $35 to about $75, the greatest demand being in the $40-$50 bracket. Except with a few of the lowest rentals, the landlord supplies heat and yard maintenance but makes an additional charge for garage space if furnished.

The realtors did not think more two-family houses would hurt their business. They did think present two-family rents too high because of a shortage of offerings, and that more competition would be desirable.

Controlling Factors

The writer then considered what factors should be controlling in determining a two-family zone, and tabulated these factors in the order of relative importance:

1. Supply of, and demand for, two-family rentals, including rentals over a full range of sizes. Small apartments should be considered as well as large.

2. Prevention or retardation of blight, and — at least in Westfield — only areas blighted or clearly threatened with blight should be included. In general, these will be readily accessible to retail stores, a prerequisite for extensive conversions.

3. Prevention of racial and national groups extending into areas occupied by those of higher income.

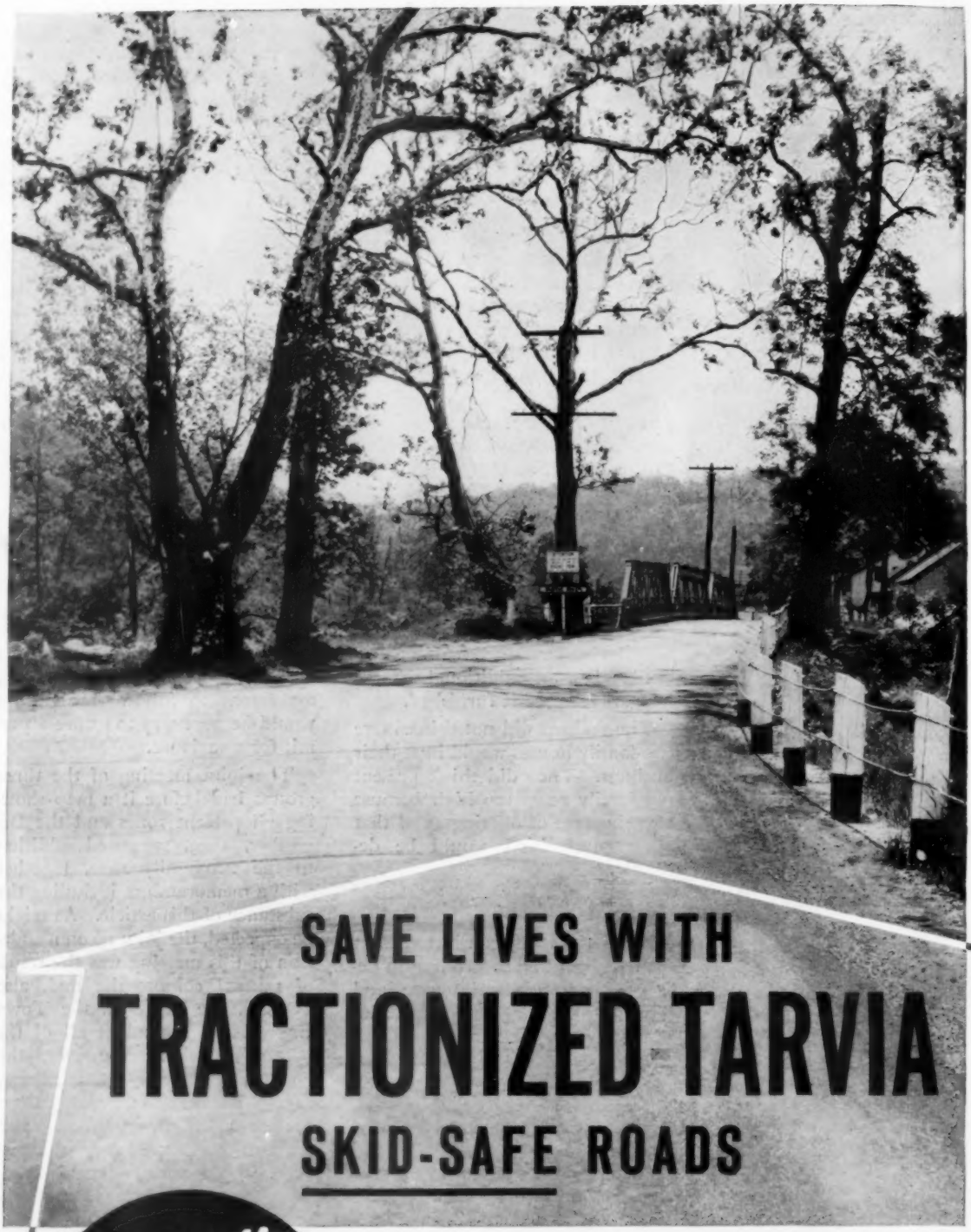
4. Prevention of the erection of new structures for two-family occupancy. Open spaces should not be included. In Westfield, blighted areas proper for the two-family zone afford an adequate number and range of houses for conversion. In the past, old dwellings have been, and in the future other old dwellings presumably would be, protected in appearance where adapted for dual occupancy. New structures presumably would have the disadvantage of not architecturally resembling single-family houses and they would compete with rentals of the older houses it is desired to protect.

5. Establishment of boundaries creating a minimum of complaint. These are the rear line of lots fronting a street rather than the middle of a street, so that if one side of a street is in the two-family zone, both sides are included.

As noted above, in the past, conversions of single-family dwellings for dual occupancy, almost without exception, have been without important change in exterior architecture, so that a casual observer would not know the building contained two apartments and the block still appears as one of detached single-family houses. If the property should be located outside the authorized two-family zone, agreement to follow this custom would be necessary to secure a permit for a variance.

The joint meeting of the three groups had before it a map showing all present zones and the December, 1939, suggested addition to the two-family zone, together with a memorandum including the substance of this article. As might be expected, the joint recommendation of this meeting was the result of mutual compromise and, also as might be expected, the Town Council did not adopt all of the recommendation. However, the result was probably as satisfactory as should be expected where there are so many opinions involved, some of which are influenced, perhaps unconsciously, by historical conditions and personal interests.

Since the writer failed to find ready-made rules of procedure, this article is written to indicate one approach to a practical problem which is before zoning authorities in many towns, in the hope that it may prove helpful and perhaps lead to the publication of practical procedures employed by others interested in small-town zoning.



SAVE LIVES WITH

TRACTIONIZED TARVIA

SKID-SAFE ROADS

Barrett Tarvia

GOOD ROADS AT LOW COST

These smooth-riding, long-lasting roads provide skid-safe motoring . . at any sane speed . . . in both wet and dry weather.

THE BARRETT COMPANY New York Chicago Birmingham St. Louis Detroit Philadelphia Boston Providence Lebanon, Pa. Rochester Baltimore Minneapolis Cleveland Columbus Toledo Youngstown Syracuse Hartford Buffalo Cincinnati Bethlehem Portland, Me. Norwood, N. Y.

In Canada: THE BARRETT COMPANY, LTD. Montreal Toronto Winnipeg Vancouver

One of America's great basic businesses

Why not remember to mention THE AMERICAN CITY?

Fast Machine Accounting Pays Costs in Collections

By THEO. H. BERG
Director of Accounts and Finance,
Lincoln, Nebr.

THE city of Lincoln has completely mechanized its tax-accounting and collecting system, replacing an obsolete system installed some fifty years ago. Under the old plan, no statements were sent for real-estate taxes, and the taxpayer had to stand in line while records were being searched for arrears, and then wait for the receipt to be written by hand.

The new plan provides for each piece of property a ledger sheet showing on one face the general as well as the special taxes, together with payments either full or one-half, and on the reverse side all delinquent taxes against the property. At the top of the sheet is the name of the present owner, with space for changes in ownership and changes in description. The sheet is good for ten years, after which it is bound in book form as a permanent record.

Each parcel is recorded on a two-piece Addressograph plate with the owner's name on one piece and the description on the other. Each property is given a number. For instance, No. 88-666 means Ledger No. 88, page 666. To allow for expansion, only even numbers were used. The 32,000 plates are a complete file of all property in the city, properly described and numbered. The Addressograph plates also provide a feature for automatic follow-up on delinquent payments by means of a Pivotab on the plates. Another tabbing feature provides for indication of special taxes and automatic selection in the preparation of special tax bills.

An Addressograph transfers the ownership and description to the ledger sheets and to a cross-index, and prints them on the tax receipts or bills, the metal plates making four good carbon copies. The bills are then ready for the tax extension, which is performed in three days instead of three weeks, by a Remington - Rand Powers tabulating punch card.

The cards are sorted mechanically according to valuation, so that all cards of the same valuation are assembled together. As soon as the amount of the levy is determined by the City Council, the amount of the total tax and half that amount are punched into all cards in each valuation group. Thus it is necessary to compute the tax only once for each group.

The cards are then automatically sorted back to their original sequence, placed in the tabulator, and the tax extension roll produced, from which the amount is transferred to the ledger sheet. The bills are printed in four copies, the first being mailed to the property owner. When the bill is paid, it is machine - receipted by a Burroughs receipting machine.

Posting the Receipts

The office copies of receipts are entered on the cash receipt journal by a Remington-Rand bookkeeping machine, to which is connected an electrical hook-up to a card punch; and as the entries are made on the machine, cards are automatically fed and punched, carrying the same information as entered on the journal.

At the close of the day's business, the total that is automatically accumulated by the bookkeeping machine must equal the total in the receipting machine, which in turn must equal the cash received.

These tabulating-machine cards are mechanically sorted to the same order as the real-estate tax records. They are then placed in the tabulator, which automatically prints the complete record of receipts in proper sequence, from which direct posting is made to the ledger.

Advantages

The taxpayer is sent a statement of the tax against his property, and when he appears to pay, he is waited on immediately. It is not necessary for him to stand in line until the receipt is written. Under the old system, there were sometimes as many as 80 people standing in line ready and willing to pay us money, when we were not equipped to receive it without making them wait until we could check the records and write receipts. Under present plan, we collected, to December 31, a larger percentage of the current levy than in any like period since 1931. In December, 1939, current tax collections totaled $23,779 more than those of the year before, and this increase amounted to twice the cost of the entire new system, which was installed with the assistance of the Works Progress Administration.

The work is now spread over several months instead of trying to do it all during the tax-collection period. This increases efficiency and gives us more time to devote to delinquents.

At the end of the month, we have a complete statement of collections, showing the amount of tax, amount of interest and the total by years, together with a separate account of any special assessments.

If we desire to make a test check on the Treasurer, we can pick out any ledger number and total the unpaid amounts still in the file. The difference between the original control, allowing for any adjustments made by the Council, and the total in the file represents the collections for this particular ledger, and must be accounted for by cash received.

Should the valuations and mill levy for the next year remain the same, we run the same cards over, and are through. If there is little or

At Long Last, We're Getting Rid of This—

Reproduced through courtesy of the Des Moines Tribune

PRESS AND PUBLIC ARE QUICK TO RECOGNIZE EFFICIENT Municipal Management

The above cartoon appeared with an editorial in the Des Moines Tribune. One paragraph of the editorial said: "For years we have been yelling at the top of our lungs that there was absolutely no excuse whatever for local governments to function any less efficiently, or with any less modern methods, than the best run private business."

The Tribune's editor devoted space to this matter of municipal management because he knew it was of *real public interest.*

Today, more and more municipal officers are recognizing the power of modern methods in building and holding public good will by giving better, faster service.

Addressograph Methods simplify and co-ordinate important municipal office routine. They eliminate errors, omissions, misspelling and illegibility on bills, receipts and other forms. They end waste motion which causes irritating delays. They remove the hazards of errors that cause inconvenience or defeat the collection of revenue.

Get the complete story of these methods and how they are being used by other municipalities. Contact your nearest ADDRESSOGRAPH SALES AGENCY or mail the coupon.

EVERY MUNICIPALITY CAN BENEFIT WITH ADDRESSOGRAPH METHODS FOR HANDLING

Tax Rolls • Assessment Records • Voters' Lists • Licenses • Utility Bills • Inventory Records • Payroll Forms • Relief Lists and Orders • Street Department Records Police Notices • Bulletins

ADDRESSOGRAPH-MULTIGRAPH CORPORATION, *Cleveland, Ohio*

ADDRESSOGRAPH-MULTIGRAPH OF CANADA, LTD., TORONTO

Sales Agencies in Principal Cities

Addressograph is a trade-mark registered in the United States Patent Office

MAIL COUPON TODAY AC-7

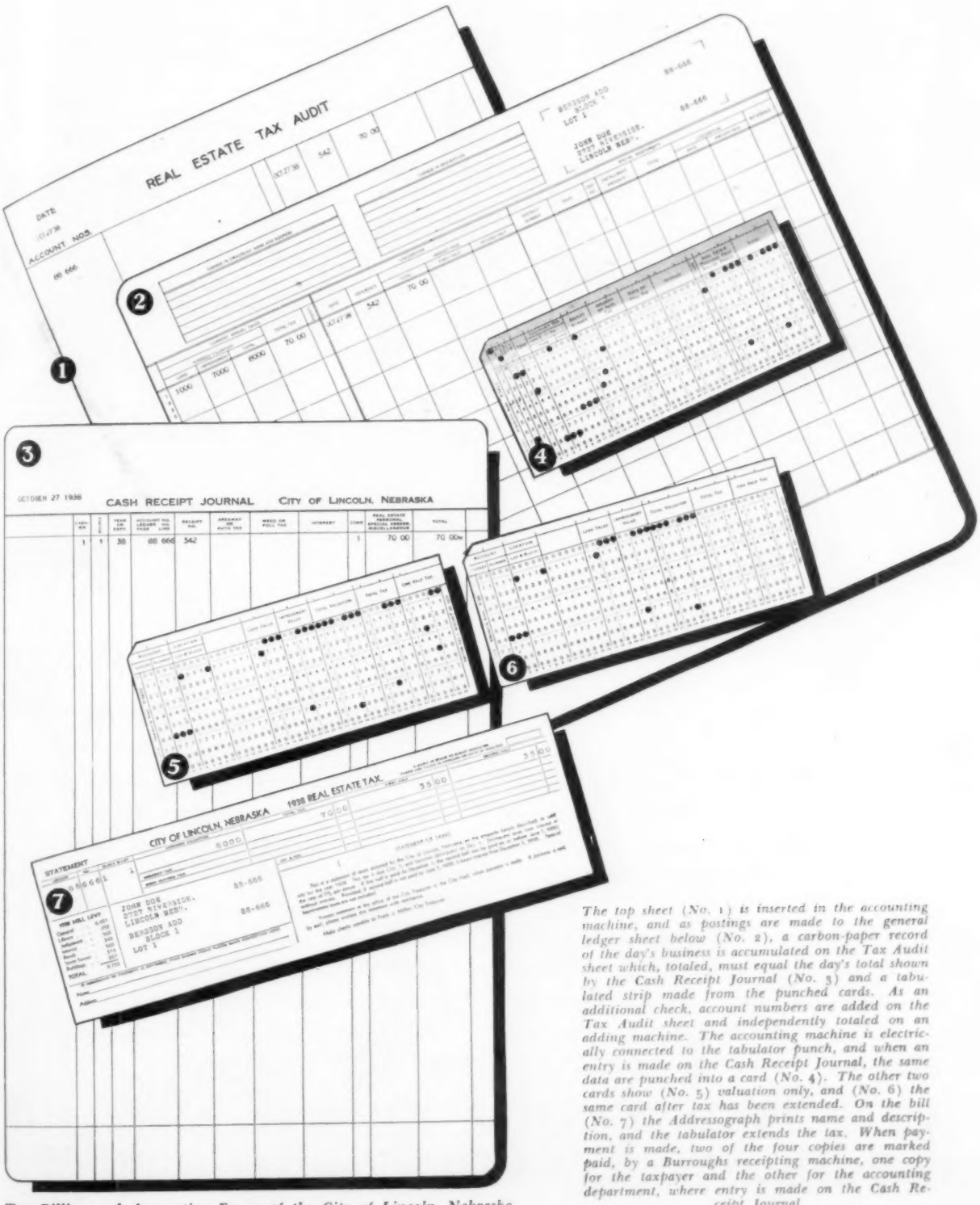
Addressograph-Multigraph Corporation
Euclid Post Office, Cleveland, Ohio
Please send me complete story of Addressograph Methods.

Name ..... Municipality .....

Address ..... City ..... State .....

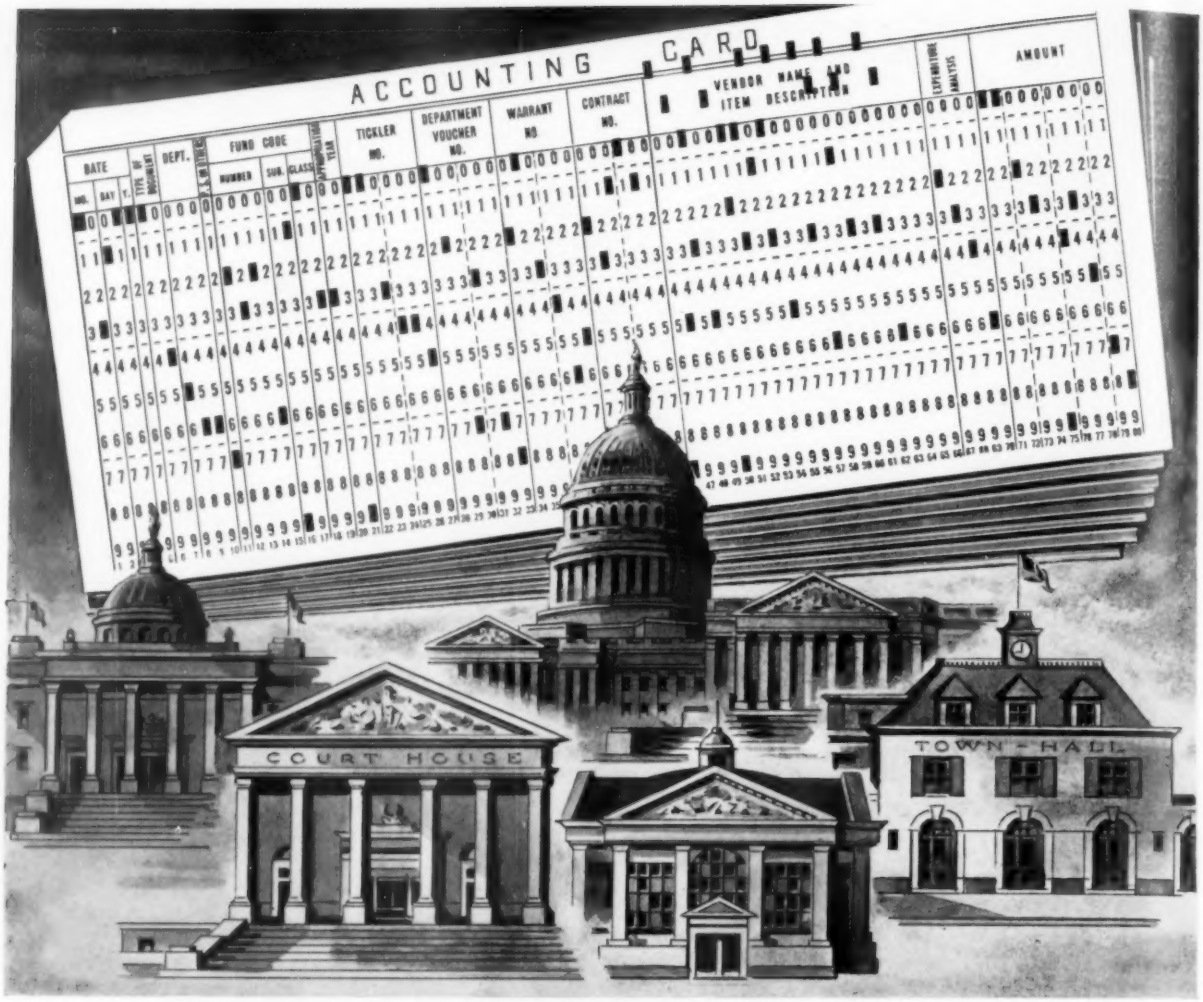
no change in the valuation but the mill levy is changed, by running the cards through a "Reproducer" new cards are made, showing tract number, lot and block number and valuations only. Then when the new levy is made, the cards are "gang punched" to show the tax.

When we desire to know how any section of the city is paying its taxes, we place the tabulating cards in the sorter and sort out those covering the particular section and run them off on the tabulator. This shows what has been paid. Finally, the tabulating equipment is also used for cost accounting in the Department of Public Works.



Tax Billing and Accounting Forms of the City of Lincoln, Nebraska

The top sheet (No. 1) is inserted in the accounting machine, and as postings are made to the general ledger sheet below (No. 2), a carbon-paper record of the day's business is accumulated on the Tax Audit sheet which, totaled, must equal the day's total shown by the Cash Receipt Journal (No. 3) and a tabulated strip made from the punched cards. As an additional check, account numbers are added on the Tax Audit sheet and independently totaled on an adding machine. The accounting machine is electrically connected to the tabulator punch, and when an entry is made on the Cash Receipt Journal, the same data are punched into a card (No. 4). The other two cards show (No. 5) valuation only, and (No. 6) the same card after tax has been extended. On the bill (No. 7) the Addressograph prints name and description, and the tabulator extends the tax. When payment is made, two of the four copies are marked paid, by a Burroughs receipting machine, one copy for the taxpayer and the other for the accounting department, where entry is made on the Cash Receipt Journal



HALF A CENTURY

of Service to Government

For fifty years, punched cards and International Electric Accounting Machines have rendered valuable service to governmental agencies throughout the United States. Year by year, the operation of this method has been improved and its capacity increased to meet the growing demands of city, county, state and nation.

Today, when administrators of governmental agencies are confronted with greater demands and responsibilities than ever before, the speed, accuracy and flexibility of punched card accounting provide an ideal solution to the many problems of governmental stewardship. Call your nearest International Representative for detailed information.

INTERNATIONAL BUSINESS MACHINES CORPORATION

World Headquarters Building
590 MADISON AVENUE, NEW YORK, N. Y.

Branch Offices
IN PRINCIPAL CITIES OF THE WORLD

During April we hope you will remember to mention THE AMERICAN CITY.

Philadelphia Water Supply

(Continued from page 59)

3. Few major improvements have been made to the water-works system since the construction of the purification system twenty-five and more years ago.

4. The purification system does not meet modern standards.

5. The water-works system has been inadequately maintained, resulting at times in insufficient margins of safety, low pressures, poor service, unpalatable water, and unsatisfactory conditions.

6. The per capita water consumption is very high, but lower than the maximum experienced in 1927.

7. Rates for water service are very low.

8. The water works has made substantial contributions from revenues to the general funds of the city.

9. A new source of water supply would require the expenditure of many millions of dollars.

The Committee on Water Supply then expresses the following opinions in its Progress Report:

1. Water supply is the most important public utility. The general well-being of the city is more dependent on water supply than on any other facility.

2. It is of the greatest importance to rehabilitate promptly the present system.

3. It will be necessary to use all of the present city water system for some years, and much of it for as long as it is useful in service, even if a new and less polluted raw water supply should finally be determined to be desirable, as the construction of the new works would require some years' time.

4. The quality of the raw water in the rivers can be improved materially by the treatment of sewage and industrial wastes. This would require treatment of Philadelphia's sewage, including that reaching the Delaware River below the city's intake, since city wastes probably reach the water-works intake as a result of tidal action.

5. The peak of greatest pollution of the rivers from which the water supply is obtained may have been reached or passed unless the quality of the Delaware River should be adversely affected by New Jersey's proposed diversion of a large quantity of Delaware River water through the Delaware and Raritan Canal to Northern New Jersey or by the construction of a new Delaware and Raritan ship canal.

The committee concludes its report with the following recommendations:

1. An adequate study of the present water-works system should be made promptly by a competent committee or board acting under broad reference instructions, which should make definite and unqualified recommendations. No substantial expenditures should be made or committed for in advance of the results of such study, except to correct obvious deficiencies in maintenance.

2. The present water-works system should be rehabilitated promptly to eliminate the present hazards resulting from under-maintenance in past years. Such work should be planned and executed to conform with adopted plans for future development.

3. Every effort should be made to obtain full value for the monies expended on the water system and to build up a competent staff of ample experience, adequately compensated to attract and hold high-grade employees.

4. The demands on the system should be reduced by decreasing leakage and unauthorized use, by continual water distribution surveys, adequate maintenance of consumers' meters, metering all flat-rate consumers, revising the rate schedule for metered service to encourage economy in the use of water, and by controlling the summer use of fire hydrants for bathing.

5. The quality of the raw-water supply should be improved by treatment of sanitary and industrial wastes in the city and upstream.

6. A financial policy should be adopted to assure sufficient funds annually for the adequate maintenance of the system.

7. Any permanent water-supply improvements recommended by the proposed board or committee should be constructed as promptly as finances permit.

The City Council of the city of Philadelphia has taken action on this report, and the voters will ballot on the proposed $18,000,000 loan for improvements in the water supply at the primaries on April 23, 1940. The improvements recommended by the consulting engineers, Morris Knowles, Inc., of Philadelphia, include rehabilitation of the filter pumping stations and distribution system; with no steps at the present time toward a new source of supply.

Strange Names for Towns

IN the March issue of *Banking* (page 24), T. D. MacGregor discusses the origin of some unusual town names:

Peculiar, Mo. (Population 227.)—Charles W. Fish, a Connecticut Yankee, was an early settler here. He applied for a post office, sending in some ordinary name. The Department told him there was already a post office of that name in the state. Trying again with no better luck, he was told to choose some "peculiar" name. So he said, "All right, call it 'Peculiar' " and they did.—CASS COUNTY BANK.

Odd, Va. (Pop. 229.)—The town got its name because its first post office was in the hall of the Independent Order of Odd Fellows.—L. C. RIGGINS, Postmaster.

Evening Shade, Ark. (Pop. 325.)—The town was settled in 1817 by Capt. James Thompson, cousin of President James K. Polk. Thompson's mill became a halfway camping place for wagon trains and travelers, partly perhaps, because of a grove of trees that threw a shade. Hence the name for the mill and subsequent settlement.—BANK OF EVENING SHADE.

Gravity, Iowa (Pop. 465.)—Near the center of Taylor County, the town was considered the center of attraction—hence "gravity."—STATE SAVINGS BANK.

Hundred, W. Va. (Pop. 788.)—Henry Church, who died in 1860 at the age of 109, was known as "Old Hundred," and the town was named after him.—BANK OF HUNDRED.

Social Circle, Ga. (Pop. 1766.)—Early settlers assembled at night and formed a circle around the town well. When the question of a name came up, one of the leaders said, "Since we are very sociable and come together in a circle let us call it 'Social Circle.' "—SOCIAL CIRCLE BANK.

Scalp Level, Pa. (Pop. 1875.)—Jacob Esh, a pioneer, in clearing hemlock and chestnut trees, noticed that his men had not made clean work of the stumps and underbrush. "Boys," he said, "scalp 'em level!" The saying became a by-word and eventually the name of the place.—MERCHANTS AND MINERS BANK.

Bad Axe, Mich. (Pop. 2332.)—This name comes from an old axe found by early surveyors when they camped here in 1861.—HOLLAND STATE BANK.

Walla Walla, Wash. (Pop. 16,000.)—The Indian word "walla" means water, and, as there are many small streams running down through the valley, this word was simply repeated, signifying "water, water."—THE BAKER-BOYER NATIONAL BANK.

Calico Rock, Ark. (Pop. 659.)—This town is located on the White River in the Ozarks. A bluff a mile long and 150 feet high is just below the town. Water running down the bluff has colored the rock in stripes of different shades. Steamboat captains had a landing here and called it "The Calico Rock," owing to the resemblance of the bluff to a piece of calico cloth.—STATE BANK OF CALICO ROCK.

Burroughs

LOW-COST PAYROLL MACHINE
For Municipalities

Provides 4 Payroll Records in One Writing

THE PAYROLL

EARNINGS and PERSONNEL RECORD

EMPLOYEE'S STATEMENT

PAY CHECK or pay envelope

Fast electric carriage operation and many other special features of this low-cost Burroughs Payroll Machine assure the quick, easy, economical writing of four payroll records *in one operation.*

Columns are provided on both the Employee's Statement and the Earnings Record for cash advances, retirement fund, badges, uniforms, equipment and other deductions. Pay envelopes can be prepared for employees paid in cash on a daily or weekly basis, and checks for employees paid semi-monthly or monthly.

Any municipal office, institution, school board or other activity desiring complete, accurate payroll records at extremely low cost, should investigate this new Burroughs. Telephone the local Burroughs office for complete information, or write direct to—

BURROUGHS ADDING MACHINE COMPANY
6774 SECOND BOULEVARD, DETROIT, MICHIGAN

When you write for that catalog, kindly mention THE AMERICAN CITY.

Asphalt Plant, City of Cleveland

(*Continued from page 69*)

ture of various materials at the following points:

Asphalt Cement
(1) On the asphalt header line leading from the storage tanks
(2) At the asphaltic discharge line into the weighing bucket in the mixer building

Fuel Oil
(1) On the suction line between the pump and the storage tank
(2) On the feed line between the burners and the oil heaters

Aggregates
(1) At the boot of the hot elevator
(2) At the discharge from the hot storage bin into the mixer

At these six points iron Constantan thermocouples are installed, connected by compensating wire to the recording potentiometer. The potentiometer is equipped with a strip chart, traveling at the rate of 3 inches per hour and recording in distinctive colors and numbers the temperatures at the six control points mentioned.

There is also an indicating thermometer located on the asphalt line near the weigh-bucket discharge valve in clear view of the operating platform. The fuel-oil line is equipped with indicating thermometers on the suction line and between the heaters and the burners. An indicating thermometer is located at the cold elevator showing the temperature of the heated materials at the boot of the hot elevator, enabling the operator stationed at the former point to regulate the flow of cold material to the dryer.

Heated aggregates are deposited from hot storage directly into a weigh-box of 4,000 pounds capacity by means of an operating lever close to the operator's station. The weigh-box is supported from Fairbanks-Morse suspension hopper scales by means of a lever system and hanger bolts. In weighing batches, the greater portion of each batch is fed by the hand-controlled gate at the hopper bottom, and final, accurate weight is secured by Jeffrey-Traylor feeders at each hopper, controlled by a photo-electric cell on the dial scale. In this manner, extreme accuracy in proportioning is possible.

In similar manner the exact weight of asphalt cement in the 400-pound steam-jacketed weigh-bucket is secured by photo-electric cell control, and the feeding of dust is also controlled by a photo-electric cell.

Performance Test

The performance test, conducted in accordance with the terms of the contract, for the purpose of demonstrating the plant's conformity to guaranteed capacity and operating cost, was concluded on November 2, 1939. During the 30-day period covered by this test, 11,309.5 tons of asphaltic mixture were produced, or an average of approximately 377 tons per 8-hour day. The maximum day's run was on October 25, when 502 tons of hot mix were produced. The nominal capacity of the plant is 480 tons for an 8-hour day.

The cost of operation during the performance test, which includes all items of plant expense such as labor, fuel oil, electric current, grease, water, etc., was found to be about $400 annually less than that guaranteed by the contractor as determined by the 30-day period in conformity with regulations set forth in the specifications.

The plant was constructed by The F. D. Cummer & Son Co., of Cleveland, contractors. It was designed and built under the supervision of the Department of Public Service of the city of Cleveland; Miles E. Evans, Director; John C. Wenrick, Commissioner of Engineering; S. H. Murdock, Assistant Commissioner of Engineering; and R. D. Brodie, Engineer for the Division of Streets.

All Elements Work for Alton's New Playground

AFTER working for more than two years to complete their project, the citizens of North Alton, in Alton, Ill., officially opened a lighted playground for public use.

The idea for the North Side playground originated at a church brotherhood meeting, and immediately after tentative suggestions had been offered, the North Side Playground Association and the North Side Auxiliary were organized. The search for a playground site then began. Following considerable investigation and deliberation, the committee recommended an area of 4.99 acres, located in the very center of the district to be served by the new agency, and convenient to traffic. There was a deep valley running through the land, however, which would have to be tiled and filled with soil graded from the hills. But the magnitude of the task did not frighten the North Side enthusiasts, for they had seen other city playgrounds develop from worse sites than this one.

The boosters started a money-raising campaign and secured the purchase price of $1,700. The land was deeded to the city, and a Works Progress Administration project was filed. The City Council voted $600 for tile, and the Recreation Commission gave about $1,000. The North Side group later contributed an additional $500 for lights, water lines, and such necessities.

Lighting poles were purchased from the Shell Petroleum Corporation at scrap iron prices: $49.50 for six 48-foot poles made of 4- and 6-inch pipe. A member of the North Side Club who is a welder by profession donated his equipment, and other welders in the club assembled the poles, which were erected by a group of volunteer North Siders. The Kiwanis Club purchased ten floodlights, and the North Side group another four.

This is Alton's fourth lighted playground. In each, modern playground equipment has been installed, with sections for children of all ages, and a regular playground program is carried on from 9:00 in the morning until 9:30 at night each week-day. All these playgrounds were obtained and improved in the same manner. Neighborhood interest was there; the entire city was called on at times for volunteer labor and money, and very seldom was a refusal reported.

—Condensed from "One More Step Forward," by Russell J. Foval, Superintendent of Recreation, Alton, Ill., on page 684 of the March, 1940, issue of *Recreation*.

What's that, Daddy?

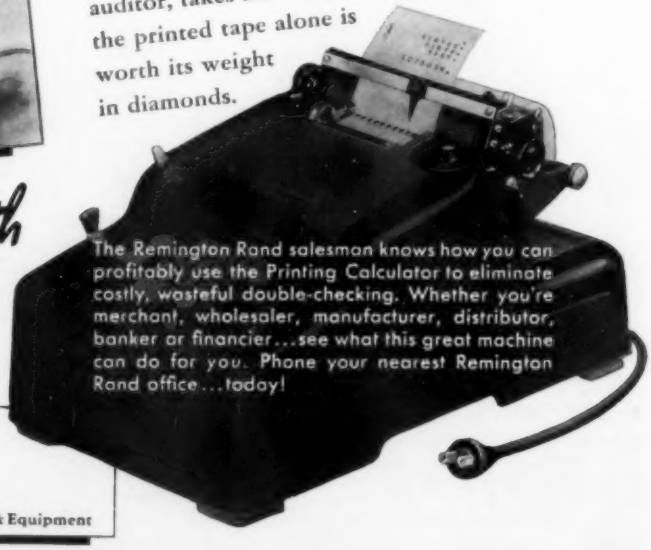
● Well, Rickey, I guess *you'd* call it an arithmetic machine, but its real name is the Remington Rand Printing Calculator. Our company invented it a few months ago, and I think it's the finest office figuring machine there is today.

Why, Daddy?

● Because it adds, subtracts, multiplies and divides. A lot of machines do that, but here's the only one that prints the answer to every problem right here on this tape. Not just the answer alone, but all the factors too. When you want to divide 2738 by 126, it prints both of those figures, the quotient of 21, and the remainder of 92—all automatically!

What's it for, Daddy?

● All kinds of businesses use it, son—especially when they want a printed record of important calculations. I'm selling a lot of them these days—to Mr. Trent at the bank and Mr. Snell over at the planing mill and Mr. North in the department store. It's so easy to carry that Mr. Freel, the traveling auditor, takes his everywhere. And all of them say the printed tape alone is worth its weight in diamonds.



The Remington Rand salesman knows how you can profitably use the Printing Calculator to eliminate costly, wasteful double-checking. Whether you're merchant, wholesaler, manufacturer, distributor, banker or financier...see what this great machine can do for you. Phone your nearest Remington Rand office...today!

Make an appointment with this boy's Dad

Remington Rand Inc.
BUFFALO • NEW YORK
In Canada: 199 Bay Street, Toronto
World's Largest Makers of Adding & Bookkeeping Machines, Systems & Equipment

Water Rates and Service Charges

1940—Part IV

Covering Domestic and Industrial Meter Rates, Discounts and Penalties, Installation Charges, Fire Hydrant Rentals and Fire Sprinkler Costs

Wellsville, N. Y.

Present population	5,900
Population served	6,100
Number of active services	1,350
" " meters	1,580
" " hydrants	155
Miles of water main	17 79

The domestic rates for metered services in Wellsville are:

		Per 100 Cu. Ft.
First	7,500 cu. ft. per quarter	$ 25
Next	7,500 " " " "	18
All over	15,000 " " " "	10

The minimum charge per quarter, payable in advance, is $3.75, which allows the consumer the use of 1,500 cu. ft. of water. Large consumers may be required to pay monthly instead of quarterly, at proportionate rates, at the option of the Superintendent. A discount of 10% is allowed on all quarterly bills paid on or before the 20th day of the first month of the quarter, and on all monthly bills paid on or before the 10th day of the month.

A special manufacturers' and commercial rate, applicable to those using 10,000 cu. ft. of water or more per month, and payable monthly with no advance payment, is as follows:

		Per 100 Cu. Ft
First	10,000 cu. ft. per month	$ 16
Next	10,000 " " " "	.11
All over	20,000 " " " "	.08

A discount of 10% is allowed on all bills paid on or before the 10th day of the month.

The Water and Light Department accepts an application for water service from the owner of the property only. The applicant for a new service must install the service from the house to the main in the street at his expense and responsibility. The Water Department makes the tap and installs the pipe to the curb box. The meter is furnished by the Water Department and remains its property. No charge is made for the installation of water services by the Water Department, other than the required advance minimum payment of $3.75 per quarter.

The installation and maintenance of public fire hydrants is contributed to the general village government without charge. There are no private fire hydrants. Service to lines for sprinkler heads for private fire protection is furnished without charge.

E. J. Rowe,
Superintendent, Water & Light Department.

Bridgewater, Mass.

Present population	9,200
Population served	5,000
Number of active service	1,200
" " meters	1,200
" " hydrants	237
Miles of water main	38 8

All water services in Bridgewater are metered, and the following scale of charges is in effect:

	Per 100 Cu. Ft.
First 18,000 cu. ft. per quarter	$ 30
Next 20,000 " " " "	275
" 20,000 " " " "	25
All water in excess of 58,000 cu. ft. per quarter	20

The minimum charge is $5.00 per quarter, or $20.00 a year, plus $1.00 for the rental of a 5/8" meter, which entitles the consumer to the use of 1,700 cu. ft. of water each 3 months, without further charge. The minimum charge of $5.00 per quarter is billed in advance, at the beginning of the quarter, and any excess is billed at the end of the quarter when the next advance payment becomes due.

If a meter fails to register because it is out of order, the charge for water used during the period is based on the average charge when the meter was in running condition. Water service may be discontinued temporarily upon written notice to the Department, and during the period of discontinuance the minimum rate and other charges for service are suspended. A charge of $2.00 is made for shutting off and turning on the water.

All meters are furnished by the Water Department and set without charge. Repairs are made by and at the expense of the Department, except when damage has been caused by the consumer, in which case the repairs are made by the Department and charged to the consumer. All damage to meters because of freezing is considered as caused by the consumer.

The rental for both public and private hydrants is $15 each per year. The charge for sprinkler heads for private fire protection is 10c per head per year.

Mabel S. Swift,
Clerk, Water Department.

Swampscott, Mass.

Present population	10,490
Population served	10,490
Number of active services	2,855
" " meters	2,855
" " hydrants	300
Miles of water main	34 ½

The minimum annual rate for water service in Swampscott, payable in advance, is $8.00, for which the consumer may use not to exceed 3,500 cu. ft. of water. Water used in excess of the stipulated figure is billed at 20c per 100 cu. ft. All water charges are assessed to the recorded owner of the premises, who is held liable for the payment thereof.

The annual meter rental for the various sizes of meters used is as follows:

5/8"	$1 00
¾"	1 50
1"	2 00
1½"	3 00
2"	5 00
3"	8 00
4"	15 00

The form of application used by the Swampscott Water Department is a yellow card, measuring 4 x 6 inches, bearing the statement:

"The undersigned hereby agrees to take and use water, subject at all times to the current rules and regulations established by the Water Commissioners."

There is then space for the signature and address of the applicant, and the date the application is made. The rest of the card is used for noting the location of the stop box and the service number. All installations of water services are made by the Water Department at cost.

The town of Swampscott pays to the Water Department the sum of $1,000 per year for the installation and maintenance of all fire hydrants required. There is no charge for sprinkler heads for private fire protection.

John M. Mather,
Superintendent, Swampscott Water Department.

Coshocton, Ohio

Present population	12,000
Population served	12,000
Number of active services	3,350
" " meters	2,800
" " hydrants	220
Miles of water main	30

Water bills are rendered quarterly in Coshocton, with a minimum charge of $3.25. The charge for the first 1,000 cu. ft. is $2.50, and all after that is billed at 60c per 1,000 cu. ft. All water rents are payable in advance at the office of the Water Works in the City Hall. Unless paid within 30 days, water is shut off without further notice. Where water is shut off for failure to pay the water rent, a

VALUE

ACCURACY . . .

The Badger Meter Mfg. Company pioneered higher water meter accuracy standards.

Constant improvements in equipment have been made each year to maintain this leadership . . . In specifying Badger Meters you are assured of greater accuracy.

BADGER METER MFG. CO.
MILWAUKEE, WISCONSIN

Branch Offices: New York City . . . Tampa, Fla. . . . Seattle, Wash. . . . Savannah, Ga. . . . Kansas City, Mo. . . . Marshalltown, Iowa . . . Los Angeles, Calif. . . . Chicago, Ill. . . . Waco, Texas . . . Philadelphia, Pa.

DURABILITY
DEPENDABILITY
SENSITIVENESS
LOW COST MAINTENANCE

BADGER *Water* METERS

charge of $1.00 is made for turning on the water.

There is no charge for installation and maintenance of public fire hydrants. The Water Department makes a charge of $20.00 for ¾" service taps.

JESSE HALLER,
Safety Service Director, Coshocton Water Works.

Coffeyville, Kans.

Present population	17,636
Population served	.....
Number of active services	4,840
" " meters	4,341
" " hydrants	225
Miles of water main	58.29

The meter rates for water used within the city limits of Coffeyville are as follows:

		Per 1,000 Gals.
First	20,000 gals. per month	$ .25
Next	80,000 " " "	.20
"	900,000 " " "	.15
"	1,000,000 " " "	.10
All additional gals. per month		.045

This schedule of rates applies to each meter, but where more than one property is owned by the same individual and located in the same block, and is supplied by the same meter, such a property owner is considered as one customer and entitled to quantity rates for the entire amount. Within the city limits the minimum charge per month is based on the size of the meter as follows:

⅝"	$1.00
¾"	1.00
1"	2.00
1¼"	2.00
1½"	3.00
2"	5.00
3"	6.00
4"	9.00
6"	12.00

The rates for water furnished to domestic customers outside the city limits are:

		Per 1,000 Gals.
First	20,000 gals. per month	$ .30
Next	80,000 " " "	.25
"	900,000 " " "	.20
"	1,000,000 " " "	.15

The minimum charges per month for domestic consumers outside the city limits of Coffeyville are based on the size of the meter used and are:

⅝"	$1.50
¾"	1.50
1"	2.50
1¼"	2.50
1½"	3.50
2"	5.50
3"	6.50
4"	10.00
6"	13.00

Bills for water are due on the first day of each month for services rendered during the preceding month. Service is discontinued promptly without notice if bills are not paid by the 10th of the month. The Water Collector has the right to exact a deposit of a sufficient sum to guarantee payment for service of water and to deny service until such deposit is made. In case a consumer has his service discontinued for non-payment of a bill, a penalty of $1.00 is charged for re-installation of service.

Water meters are inspected and tested without cost to the consumer as often as is deemed sufficient by the Superintendent to insure their continued repair and accurate registration.

A water meter deposit is required for each meter installed for a consumer, as follows:

⅝"	$4 00
¾"	6 00
1"	8 00
1¼"	15 00
1½"	20 00
2"	30 00

The deposit for meters installed for consumers outside the city limits of Coffeyville are the same as for urban customers.

Applications for water service must be made in writing on a contract blank furnished by the Water Department stating fully and truly the purpose for which the service is required. Service pipes are laid by the city from the main to the curb. The consumer may pay the following service connection fee at the time application is made:

¾" service pipe	$10 00
1" " "	12 00
1¼" " "	15 00
1½" " "	20 00
2" " "	30 00
4" " "	50 00
6" " "	70 00

Each water meter which is located outside a building must be placed either in a tile or a cement meter box with an air-tight cover, which is furnished and installed by the city at a cost of $5.00 for ⅝" meter. For larger meters the cost is increased.

There are no meter rentals for public fire hydrants. Also, there is no charge for private fire protection when the owner or tenant of the property is a water consumer to the amount of $3.00 per month or more. If the property owner or tenant does not consume water on the premises supplied with private fire protection to the amount of $3.00 per month at the regular meter rates, then there is a charge of $3.00 per month, less the amount of the regular water bill. Private fire protection is defined as standpipes, automatic sprinkling systems, or fire hydrants, located on the consumer's premises and used exclusively for fire protection.

NELL STEGALL,
Bookkeeper, Coffeyville Municipal Water Works.

North Attleboro, Mass.

Present population	10,202
Population served	10,202
Number of active services	1,831
" " meters	1,788
" " hydrants	353
Miles of water main	45

A consumer using not more than 40,000 gals. of water per year pays semi-annually, in advance, a minimum annual rental of $6.00, which entitles him to use 10,000 gals. of water per year for one year. All water used in excess of 10,000 gals. is billed at 30c per 1,000 gals., up to 40,000 gals., and then 25c per 1,000 gals. for all water used in excess of 40,000 gals.

A consumer using not more than 100,000 gals. of water per year pays semi-annually in advance a minimum annual rate of $10.00 entitling him to use 40,000 gals. of water per year for one year. A charge of 25c per 1,000 gals. is made for water drawn in excess of this quantity, until the consumer has used 100,000 gals., when the rate per 1,000 gals. is reduced to 20c.

A consumer using more than 100,000 and less than 240,000 gals. of water per year pays semi-annually in advance a minimum annual rental of $20.00, which entitles him to use 100,000 gals. of water per year for one year. He pays 20c per 1,000 gals. for water drawn in excess of this quantity.

A consumer using over 240,000 gals. of water per year pays monthly for water used at the rate of 20c per 1,000 gals., up to 500,000 gals., and then 15c per 1,000 gals. for all water used above this amount. The water year expires September 30, and this rate applies to a single service only.

All meters are furnished by the Department at no cost to the consumer and remain the property of the Department. All water takers are required to protect the water meters on their premises from freezing. Meter repairs are made by the Department, at the expense of the Department unless the damage is the fault of the property owner. If a meter gets out of order or fails to register, the average consumption as shown by the meter when it was in order is charged.

Water rates are payable semi-annually on April 1 and October 1, at the office of the Water Commissioners, for all consumers using less than 240,000 gals. of water per year. Non-payment of water rates on or before the 16th day of the month following the date of bill is considered cause for shutting off the building or premises, and water is not turned on again until all causes of complaint have been removed and all dues or fines paid, with an additional payment of $1.00 each for cutting off and letting on the water.

The Water Department tests a meter free, where a consumer has reason to suspect the correctness of the registration, but in its booklet on rules and regulations the Department states:

"A sudden increase in the registration of water is never, so far as the experience of this Department goes, to be accounted for by saying that there is something wrong with the meter."

The form of application for a supply of water requires the signature of the tenant and the owner of the property, both of whom are held equally responsible for the water dues, and on the form they acknowledge that they have read the rules and regulations of the Board of Water Commissioners, and pay all bills for rental charges for meters and bills due for water. Applicants wishing a service pipe laid when there is frost in the ground, must pay the extra expense caused by the frost on the part of the service laid by the Water Department, which lays the service from the boundary line of the property to the main, the remainder into the cellar being laid at the expense of the owner. All service pipe is now copper tubing and is laid under the direction of the Superintendent of Water Works.

There is no charge for the installation,

For SPEED and Ease of installation use

UNIVERSAL CAST IRON PIPE

Ease of handling:

It's easy work for these two men to carry and lay six-foot lengths of Universal pipe.

Speedy pipe-laying:

Just watch these two men. They'll have those joints water-tight in a jiffy.

Only two bolts are needed to make a complete joint. No calking or pouring of lead.

The ratchet wrench

which this man is holding is the only tool needed for tightening the bolts and completing a leak-tight joint. No maintenance cost.

Adaptability:

Unaffected by jar, vibration or weather, UNIVERSAL pipe is safe for bridge and river crossings, and under icy or tropical conditions.

Flexibility:

Universal pipe is flexible. It withstands expansion, contraction, sudden shock, electrolysis. Many curves are laid with straight lengths.

Visit our exhibit at the A. W. W. A. Convention at Kansas City, Mo., April 21-25, 1940

Use Universal Cast Iron Pipe for Water Supply Systems, High Pressure Fire Lines, Sewage Disposal Systems & Industrial uses.

THE CENTRAL FOUNDRY COMPANY

386 FOURTH AVENUE, NEW YORK, N. Y.

Chicago, 1105 West 36th Street • Oakland, Calif., 278 Fourth Street

Bessemer, Alabama • The Central Foundry Bldg.

THE CENTRAL FOUNDRY CO.
386 Fourth Ave., New York, N. Y.

Send me the Universal catalog which shows how to install Universal Pipe easily and quickly.

Name .....

Address .....

During April we hope you will remember to mention THE AMERICAN CITY.

maintenance and furnishing of water to public fire hydrants.

All pipes for private fire services are furnished and connected by the Water Department at the expense of the owner. The Water Commissioners reserve the right to require a detector meter on all private fire lines, at the expense of the owner. The use of private fire connections for any purpose other than extinguishing fires is forbidden. If water is used for any other purpose than for fires, the Water Board estimates the amount of water so used, unless a detector meter is installed, and a charge of 50c per 1,000 gals. is made.

E. H. EBERT,
Superintendent, Electric Light & Water Department.

Klamath Falls, Ore.

Present population	21,870
Population served	27,818
Number of active services	5,600
" " meters	5,865
" " hydrants	288
Miles of water main	95 44

The minimum monthly charge for water in Klamath Falls, which includes an allowance of 300 cu. ft. of consumption, is based on the size of the service pipe and meter, as follows:

Size of Service Pipe	Size of Meter	Minimum Charge
¾"	⅝"	$1.25
1"	¾"	1.75
1¼"	1"	2.25
1½"	1½"	2.75
2"	2"	4.00
3"	3"	6.25
4"	4"	9.75
6"	6"	16.75

If the pipe and meter sizes do not correspond as in the above table, the lower minimum applying to either the pipe or the meter governs the minimum charge.

The water rates, Schedule H, beyond the first 300 cu. ft. of water, are as follows:

Next	700 cu. ft.	$ .20 per 100 cu. ft.
"	4,000 " "	.15 " " " "
"	25,000 " "	.10 " " " "
Over	30,000 " "	.08 " " " "

There is a special rate for sprinkling or irrigation use, applicable only to metered consumption between the May and October meter readings, and for the use only of residence consumers actually using water for sprinkling lawns or gardens, or by customers using water for sprinkling and irrigation purposes only. This service is supplied through meters and billed as follows:

First 300 cu. ft., as in Schedule H, is $1.25 for ¾" meter (minimum charge per meter per month).

Next	200 cu.ft.	$ .20 per 100 cu. ft.
"	29,500 " "	.10 " " " "
Over	30,000 " "	.08 " " " "

All bills for water consumed through meters are payable on the first of the succeeding month, and if not paid by the 15th, the service may be discontinued and a charge of 50c is made for turning the water off and on, at the stop cock at the curb. If this stop cock is turned on by any person except an employee of the company, an excavation is made in the street, and the water is shut off at the tap in the main and not turned on again until the arrears, the cost of replacing the street pavement, and $3.00 for the expense of shutting the water off and turning it on are paid.

Water used by the city for street sprinkling and sewer flushing is billed at 8c per 100 cu. ft. All other water used by the city is billed through meters at the regular rates.

Application for the use of water must be made on printed forms furnished at the office of the California Oregon Power Co., and the applicant must state fully and truly all the purposes for which the water may be required, and must agree to conform to the rules and regulations of the company as a condition for the use of water. The applicant may be required to pay for a flat-rate service in advance and to make a deposit on meter bills of not to exceed an estimated 60 days' bill for that consumer. Interest on this deposit is paid by the company at the rate of 6% per year to each customer for the time the service deposit is held by the company, unless the period of time is less than three months.

Where the company has distributing mains in place under or along any street, it installs the service connection of proper size to the street property line of the consumer at its own expense. This connection includes the necessary pipe curb cock and box and meter if the service is to be supplied under a meter rate. The service pipe within the consumer's premises must be kept in repair and protected from freezing at the expense of the consumer, who is responsible for all damages resulting from leaks or breaks. Where there is a leak under the street, and it is doubtful whether the water comes from the break in the company's main or from a service pipe on the consumer's premises, the employees of the company make an examination to determine the location of the leak. If it is found to be from the main or street service pipe, the company makes all repairs at its own expense, but if it is from the service pipe on the consumer's premises, the consumer is notified and required to repair the leak immediately at his expense.

The charges made by the California Oregon Power Co. for municipal fire protection are as follows:

	Per Month
Use of wells, reservoirs, mains and the first 200 hydrant connections complete (except hydrant) in excess of first 10	$974.30
Each additional 4" hydrant connection complete (except hydrant) on existing main	.50
Each additional 6" hydrant connection complete (except hydrant) on existing main	.90
Each additional 4" hydrant connection complete (except hydrant) on 4" or larger extension	2.00
For Utility Owned Hydrants:	
Each steamer hydrant (2 standard hose, one steamer connection and enclosed valve)	.65
Each standard hydrant (2 standard hose connections only, 4" riser and enclosed valve) in excess of first 10	.40
Each 4" hydrant (2 standard hose connections, 4" riser)	.30
Each 3½" hydrant (2 standard hose connections, 3½" riser)	.25
Each 3" hydrant (2 standard hose connections, 3" riser)	.20
No future installations of hydrants with less than 4" riser shall be made	...

The flat-rate charges for private fire protection through fire hydrants or automatic sprinkler systems, including the water used for extinguishing fires only, are:

	Per Month
1½", or smaller, connection to mains	$1.25
2", connection to mains	2.25
3" " " "	3.50
4" " " "	5.00

HARRY OLSON,
Civil Engineer, The California Oregon Power Co., Oregon Divisions, Medford, Ore.

Huntingdon, Pa.

Present population	9,000
Population served	10,000
Number of active services	2,580
" " meters	83
" " hydrants	80
Miles of water main	22

The domestic meter rates for consumers in Hunitngdon are 50c per 1,000 gals. for the first 3,000 gals. used per month, and 25c per 1,000 gals. for all water above the first 3,000 gals. The commercial rates are:

First	100,000 gals. per month	$ .15 per 1,000 gals.
Second	" " " "	13 " " "
Third	" " " "	11 " " "
Fourth	" " " "	09 " " "
Fifth	" " " "	08 " " "
Sixth	" " " "	07 " " "
Over	600,000 " " "	.06 " " "

All meter rates are subject to a 10% reduction for prompt payment.

There is no charge by the Water Department for the installation of water services from the main to the property line, after an applicant has signed a formal contract for water service.

There are no charges for the installation and maintenance of public and private fire hydrants, nor for sprinkler heads for private fire protection.

J. G. DILL,
Superintendent, Water Department.

Great Barrington, Mass.

Present population	6,315
Population served	4,000
Number of active services	1,300
" " meters	78
" " hydrants	140
Miles of water main	30

In Great Barrington the owner of the property is responsible for the payment of the bill, not the tenant. All bills are due within 15 days of the date of the bill and no discount is allowed on the meter rates. The rates are as follows:

First	5,000 cu. ft.	$ .16 per 100 cu. ft.
Next	10,000 " "	12 " " " "
All over	15,000 " "	09 " " " "

In addition to the charge for water used, there is a meter service charge as follows:

⅝" meter	$3.00 per year
¾" "	5.00 " "
1" "	7.00 " "
1½" "	10.50 " "
2" "	15.00 " "
3" "	22.00 " "
4" "	36.00 " "
6" "	64.00 " "

W. A. LAMONT,
Superintendent, Great Barrington Fire District.

HOW MILFORD, N. H., CURVED "Century" ASBESTOS-CEMENT PIPE WITHOUT USING ELBOWS OR BENDS

IN a 12" line recently laid from reservoir to distribution system, the town of Milford, N. H., used 5200 feet of "Century" Asbestos-Cement Pipe, selecting this product because of its many proved advantages. As shown by the illustrations, the use of "Century" Pipe also helped to solve an unusual and utterly unexpected problem.

"Century" Asbestos-Cement Pipe is made of two of the most enduring materials known—asbestos, and cement. It insures permanent relief from such costly pipe diseases as tuberculation and corrosion. It is relatively light in weight for easy handling, but is exceedingly strong. It is easily cut in the field. With it, you use "Century" Flexible Couplings which are really *flexible*, easy to install, and permanently leak-proof.

Write Keasbey & Mattison, asbestos specialists since 1873, for free illustrated catalogue, "Mains without Maintenance." Address Dept. 1017.

1 Right-of-way trouble at the last minute forced Milford, N. H., to change its plans for a pipe line from a straight line to a 90° curve of 50′ radius. The material was already at the site—straight lengths of 12" "Century" Asbestos-Cement Pipe—and everything was ready for laying. The engineer immediately took advantage of some of the unusual features of "Century" Pipe and of "Century" Flexible Couplings, and the curved line was economically laid with virtually no fuss or delay.

2 Right in the field the standard lengths were quickly and easily sawed into three sections each, and coupled with "Century" Flexible Couplings to form the needed short-radius curve. The finished job was neat and tight—ready to give Milford, N.H., generations of leak-proof, trouble-free service.

3 Stub lengths of "Century" Asbestos-Cement Pipe were joined to standard cast-iron fittings as shown, joints being poured on top of the trench where such work is easier. The assemblies were then lowered into the trench and coupled to the "Century" lines by means of "Century" Flexible Couplings.

4 Mr. R. F. Campbell, Superintendent of the Milford, N. H., Water Works, who says: "We chose 'Century' Asbestos-Cement Pipe because of its low first cost and its all-around economy due to low laying and low maintenance cost."

KEASBEY & MATTISON

COMPANY, AMBLER, PENNSYLVANIA

• See Our Exhibit at the Convention in Kansas City

Forward Steps

Reported by Municipal Officials, Chamber of Commerce Executives, and Others

Old City Hall Becomes Streamlined Municipal Building

AUSTIN, TEXAS.—This city's Municipal Building has been remodeled, as shown in the accompanying views, to meet the need for a larger city hall resulting from the rapid growth of Austin and corresponding demands for increased municipal services.

The walls of the new building are partly solid masonry retained from the old building, and partly brick and tile on a reinforced concrete frame. The building is entirely fireproof. Its appearance has been modernized by a limestone veneer on the outside of the walls, new doors and trim, steel casement windows, venetian blinds, new floors and finish throughout, indirect lighting. Terrazzo was used for the floors of lobbies and halls; rubber tile for floors of Council and Corporation Court rooms, and hardwood floors for all offices. The larger rooms and offices have acoustical treatment, and the entire building—except the jail and basement—is equipped for winter and summer air conditioning.

Floor plans and office locations are so arranged that those departments having daily contact with the public are the most readily accessible in the building. The plan of the layout is as follows:

On the ground floor are the Water and Light office, the Tax and Accounting Departments, and the Recreation Department. The Finance Director is located conveniently between the main revenue offices and the City Clerk's office. One wing of this floor is occupied by the Council Room, a private conference room which also serves as the Mayor's office, the City Manager's office, and administrative and clerical office space. Counters used in the offices are of the low type with special built-in filing equipment suited to the different needs. A fireproof vault adjoins the Accounting Department.

Except for the Legal Department and the Purchasing Agent, the second floor is occupied mainly by the engineering activities—the water, electric and public-works engineering offices, which are the largest of all departments in both personnel required and annual expenditures. All engineering divisions are served by a common design and drafting room at the north end of the second floor. The purchasing and legal divisions are advantageously located on the second floor for general accessibility to departments on the first and third floors.

The third floor is entirely occupied by the Police Department. Care was taken in planning office arrangement on this floor to locate offices with regard to their functions and the class of people who would normally have business with them. Thus the Detective Division, the jail, and that part of the organization dealing with criminal elements are located in the rear, and are accessible by an outside rear elevator. The Police Chief, Traffic Division, and Judge of the Corporation Court are placed near the front elevator and stairway; the Corporation Court Room opens off the main lobby. The police desk and radio transmitters are located about midway of the building on the main hall. This arrangement provides adequate space and equipment for a uniform crime-reporting system, an identification bureau, and photographic and records rooms.

The basement of the building is used by all departments for permanent files and storage. Here also are the mechanical and heating equipment, the print shop, and the radio equipment used in the two-way fire and police service.

The building was erected as a PWA project, and was fully paid for when completed. Forty-five per cent of the cost was paid by a Federal grant, the rest supplied by the city of Austin from current funds—making it unnecessary to raise taxes or issue bonds. The total cost of the building was $249,975, including $165,490 for general construction, $12,389 for electrical construction, $7,261 for plumbing, $37,671 for air conditioning, $9,875 for furniture and fixtures, $4,380 for paving and outside work, and $12,889 for architectural work and inspection.

The completion, simultaneously with the Municipal Building, of a new central fire station and a new service building for the utility departments permitted the wrecking of the fire station that originally joined the former city hall, and the conversion of that area into parking space. This parking area and the driveway are enclosed on the north and east sides of the building, and convenient access to stairs and elevators is provided through a courtyard. Parking spaces are marked, numbered, and assigned to the various departments according to their needs. The new service building and warehouse facilities eliminate the previous inconvenience and congestion resulting from trucks.

GUITON MORGAN,
City Manager.

Part of the walls and foundation of the former Municipal Building at Austin, Texas, above, were incorporated in the new building, on the location of the two former City Halls, and of the first Capitol of the Republic of Texas

ICE AND SNOW

WHICH WILL BE WATER

WATER

WHICH WILL BE CONTAMINATED

AT SUCH TIMES the water is not only subject to tastes from the melting snow and ice, but also due to the washing out of an accumulation of substances on the water shed. Thus, during high-water conditions, raw water may be subject to contamination from decaying vegetation, leaves, trade wastes and the like.

Flushing out of stagnant and swampy areas is always a severe problem to water works men, following SPRING THAWS. We suggest that you plan now to run regular THRESHOLD ODOR TESTS on your water supply and be prepared with an adequate supply of AQUA NUCHAR Activated Carbon in order to control such tastes and odors which are flushed to your intake.

In conditions like the above, speedy delivery is important. We have therefore arranged to have stocks of AQUA NUCHAR placed at strategic points throughout the country. This is a good point to remember when in difficulties.

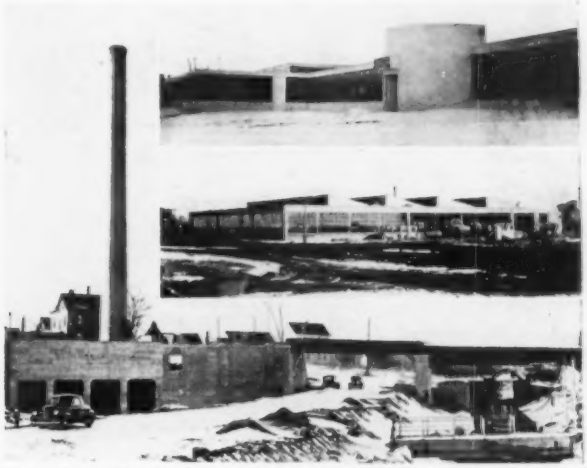
INDUSTRIAL CHEMICAL SALES

DIVISION WEST VIRGINIA PULP AND PAPER COMPANY

NEW YORK CITY	CHICAGO	PHILADELPHIA	CLEVELAND
230 Park Avenue	35 E. Wacker Drive	1322 Widener Bldg.	417 Schofield Bldg.

Manufacturers of NUCHAR *Activated Carbon*

Mayor William H. Williams of Belleville looks over plans of the new $1,000,000 pharmaceutical plant of Andrew Jergens Co., to be erected this spring. Preliminary construction of the plant is shown in view at right



Top—Belleville plant of Heyers Products Co., Inc. (electrical equipment), completed this winter. Center—New $110,000 unit of Eastern Tool & Manufacturing Co. Bottom—Trestle to siding and coal pockets of Andrews Jergens Co. plant

Successful Advertising Attracts Industries

BELLEVILLE, N. J.—This town of 30,000 people is located on the Passaic River adjacent to Newark. In the early thirties, it was hit harder than most suburban communities, when unemployment struck the industrial class which makes up a substantial unit of the town's population. Bonds were unwanted, taxes were oppressive, collections were less than 50 per cent annually, school teachers' salaries were in default.

With the town on the verge of bankruptcy, a new revenue and finance director, William H. Williams, took over the reins and launched a program of economy. In four years the picture changed. Salary reductions were partially restored. A funding program on $2,500,000 of short-term obligations lightened the town's annual burden. And in 1936 Belleville had the lowest tax rate in 17 years.

Belleville's advertising and promotion campaign has been conducted over the period since 1936 on an annual budget of $5,000. Advertising has been placed primarily in metropolitan newspapers, technical magazines and trade publications. At the top of each ad, a symbolic trademark has been used—a Grecian temple, with each letter of the town's name serving as a pillar. "The Town That Pays As It Goes" has been an effective slogan. Following are some of the other captions and slogans that have been played up: "Belleville's Fair Tax Policy"; "Center of Fine Labor Supply"; "Civic and Industrial Cooperation"; "A Stabilized Financial Program"; "Diversification of Industry."

Belleville has been able to capitalize on friendly relations between capital and labor; on its geographical location between the largest mass markets of the East; on the absence of state-income taxes, corporate or personal. The town does not grant tax exemptions nor free factory sites to lure new industries.

Although the ads have served as bait to interest manufacturers in the town, the personal follow-up by Mr. Williams, now Mayor, and his staff has been vital to the success of the program. As a result of the promotion campaign, over a period of four years 1,000,000 square feet of added industrial space have been added to the town; nearly 300 new homes have been built and 58 are under construction. Eight new factory projects, costing $333,500, were built in 1939. The decision of the Andrew Jergens Co., pharmaceutical manufacturers of Cincinnati, to erect a $1,000,000 plant in Belleville has been the most spectacular achievement of the campaign. In consummating this, Mayor Williams participated in 73 conferences in his efforts to line up a group of cooperating agencies including the city of Newark, the Essex County Board of Freeholders and Park Commission, the Newark Housing Authority, Public Service and the Erie Railroad. Nine labor unions agreed to permit him to act as sole arbitrator in the event of jurisdictional labor disputes.

What is Belleville's picture today compared with that of the dark days of the early thirties?

The tax rate this year will be $4.68 per $100 assessed valuation—10 points below last year's rate but considerably above the low of $3.80 in 1936. Today, however, the town is operating on a cash basis. Tax collections in 1939 were 80.8 per cent—highest since the low point of 47.25 per cent in 1933. The net debt at the end of 1939 was $4,984,771, compared with $5,347,846 eight years before. But the 1939 figure includes $1,000,000 added when school debt of $259,000 and $700,000 of the state and county taxes were funded as part of the town debt at the time tax collections were so low.

DAMON STETSON,
Montclair, N. J.

A Century Honor Roll of Baltimore Business

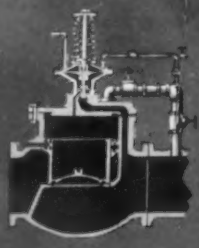
IN RECOGNITION of those local establishments that have been operated continuously for one hundred years or more, the Baltimore Association of Commerce inaugurated at a dinner meeting on April 3 a Century Honor Roll of Baltimore Business, in tribute to the American system of private enterprise. About 55 local businesses were eligible to receive the emblematic scroll awarded. They cover a wide range of business activity, and represent a good cross-section of American business. The Association says:

> During the century of their uninterrupted operation they have played an outstanding part in the progress of Baltimore, in stabilizing and advancing all aspects of our community growth, and in developing and perpetuating those principles of the American enterprise system on which our country was founded and has grown great. . . .
>
> As one of the older American cities, Baltimore typifies the economic history of the United States. This event, therefore, has national as well as local significance.

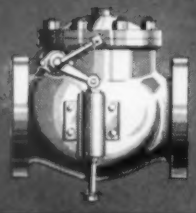
"A Cavalcade of Baltimore Business" was presented in a visual radio broadcast, reviewing the community development of Baltimore, as it has been influenced by the contributions of commerce and industry.

SMOOTH DEPENDABLE CONTROL

G-A Valves

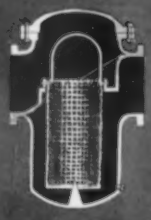


ALTITUDE VALVE . . .
Assures unfailing water-level control in tanks, standpipes and reservoirs. Works both ways and may be manually and electrically operated.



CHECK VALVE . . . .
Cushioned against water hammer or shock. Suitable for sewage service, etc. Minimum friction loss. Furnished for high or low pressure conditions.

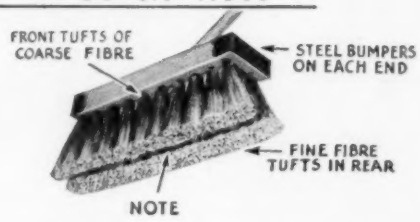
FLOAT VALVE . . . .
Furnished Angles and Globe patterns for low and high-pressure service. Cushioned by air and water and operates without shock.



STRAINER . . . . . .
Prevents sediment, etc., passing into service mains. Quickly and easily cleaned and affords capacity flow at all times. Strainer basket furnished to suit service conditions.

GOLDEN • ANDERSON
Valve Specialty Co.
FULTON BUILDING -- PITTSBURGH, PA.

The № 97 HI-WAY



First Real Improvement in Street-Gutter Brooms Since "Horse-and-Buggy Days"!

Sweeps dust and heavy particles at the same operation.

Saves back-action. This new street broom is guaranteed to give you 53 miles of sweeping.

THE JOSEPH LAY CO., INC.
SINCE 1876
PORTLAND INDIANA

We guarantee to rid you of poison ivy

IF you will apply Dolge Weed-Killer according to our simple instructions, we shall guarantee to rid your premises of poison ivy. That also applies to any other rank, hardy vegetation you want to eradicate: thistles, nettles, deep-rooted grasses and the like. Send for free manual C-04. It has 48 pages chock full of valuable data; profusely illustrated..

Dolge Weed-Killer

The C. B. Dolge Co. Westport, Conn.

Open House Dramatizes Government

MONTEBELLO, CALIF. — Proving that government can be made interesting, even exciting, Montebello's recent "open house," showing government in action, had the appeal of a circus or fair. More than 2,500 of the city's 9,500 population — including practically all the boys — attended the afternoon and evening demonstrations and displays.

Probably the most spectacular demonstration was that by the Fire Department in putting out an oil fire. An improvised oil tank was lighted. A regular fire alarm was sent in and the call was answered by the two fire trucks. By means of the police radio, patrol cars were rushed to the scene, and traffic blocked off. To demonstrate the inefficiency of old methods, an attempt was made to extinguish the fire with straight nozzles. Then the Department's new fog nozzles were used, and in a few seconds the fire was out. A quick demonstration of one of the ways in which the taxpayer's money is being spent—and why!

The Fire Department also demonstrated scaling the City Hall walls (see the accompanying illustration), the lowering of injured men by ropes and ladders from the top of the building to the ground, the packing of an injured fireman by another through an open window and down along a ladder, the transferring of an injured fireman from one fireman to another while on the ladder, the application of first aid—including the use of the resuscitator—to persons injured or overcome by smoke.

All during the afternoon and evening there was a line of people waiting to take short trips in the police cars, to listen to two-way radio broadcasts between the station and the cars. Many a youngster experienced a real thrill "riding with the cops." There were also police marksmanship demonstrations at an improvised pistol range.

Many citizens accepted the invitation to have their fingerprints recorded. Crowds thronged through all the city offices, the jail and Fire Department; and examined equipment on display from all departments — the new mechanical street sweeper recently purchased by the city, a power mower, steam cleaner, truck loader, diesel tractor, new 500-gpm pumper fire engine, etc.

Distributed to the visitors were over 2,000 copies of a brief pamphlet, "Know Your City," listing city officials, showing where the city's money comes from, what it is spent for, and some of the resulting benefits.

Scenes at Montebello's Open House

Mayor C. W. Shelley, who arranged the program of the affair, said: "We had an excellent turnout, and the results were well worth the trouble. It is something that every city, regardless of size, can well consider. We shall be glad to pass along our experience."

ELSIE D. SMITH, Deputy Clerk.

City Manager Appointments

PERCY BLOXAM, of Raleigh, N. C., has been appointed City Manager of Roxboro, N. C., to fill the vacancy created by James Harris' promotion to Hazard, Ky. Lee Cannon has replaced J. O. Vaughn as City Manager of Cornelia, Ga.

Chester C. Fisk, Assistant City Manager for the past five years, has been appointed City Manager of Berkeley, Calif., to succeed Hollis R. Thompson, who resigned, effective March 20, to become Regional Vice-President of American Airways.

C. H. Parkinson has succeeded John R. Dowd as City Manager of Moore Haven, Fla.

H. A. Von Unwerth has been appointed Manager of Muskogee, Okla., succeeding T. P. Clonts, who resigned to become General Manager of the Grand River Dam Authority.

Clyde E. Swank has been appointed first Manager of Panama City, Fla.

Ross E. Windom, City Manager of Westerville, Ohio, since January, 1930, has been appointed City Manager of Portsmouth, Ohio, to succeed Frank E. Sheehan, who becomes Executive Director, Portsmouth Metropolitan Housing Authority.

CLARENCE E. RIDLEY,
Executive Director, International City Managers' Association.

The Municipal Bond Market

Recent sales of new issues from March numbers of *The Bond Buyer*:

Amount	Borrower and Purpose	Rate (%)	Term (Years)	Basis (%)
$ 300,000	Union Co., N. J., Tax Anticipation Notes	.50	7.66 Mo.	.50
100,000	Batavia, N. Y., Public Works	.80	3 Avg.	.79
300,000	Dayton, Ohio, Delinquent Tax Poor Relief	1.25	3.33 Avg.	1.04
100,000	North Adams, Mass., Surface Drain- and Sewer, 1940	1.25	1-10 Ser.	1.05
220,000	Black Hawk, Iowa, Primary Road	1.5	5.16-9.50-A.	1.35
150,000	Wichita, Kans., Paving	1.5	5.16 Avg.	1.37
600,000	Dallas, Texas, Street Opening, Widening and Paving; School Improvement	1.80	1-20 Ser.	1.94
3,100,000	Newport, R. I., Water Works	2.25	17.33 Avg.	2.22
125,000	Harrisonburg, Va., General Obligations	3	6.5 Avg.	2.85
145,000	Pasquotank Co., N. C., School	3	12.25 Avg.	2.99

Today, water works experts take long range precautions to guard against contamination of our water supplies. Nothing is left undone that adds in any measure to the safety of the water that millions of people in America drink every day.

Pure water in nearly every city, town and village in America *is an accomplished fact!* . . . an accomplishment that has been achieved largely through the use of liquid chlorine.

And SOLVAY LIQUID CHLORINE helps purify a large share of the water Americans drink every day.

Solvay Liquid Chlorine is used by many of America's municipalities both for water purification and sewage disposal because engineers will readily testify that the Solvay source of supply is dependable . . . that they can get dependable advice and assistance from the Solvay Technical and Engineering Service Division.

If you have a problem concerning the purification of water, or if you are considering the use of Liquid Chlorine for sewage disposal, don't hesitate to call on Solvay Technical Service. It is maintained to help you.

SOLVAY SALES CORPORATION

Alkalies and Chemical Products Manufactured by The Solvay Process Company

40 RECTOR STREET NEW YORK, N. Y.

BRANCH SALES OFFICES:

Boston Chicago Cleveland New Orleans Philadelphia St. Louis
Charlotte Cincinnati Detroit New York Pittsburgh Syracuse

SOLVAY

TRADE MARK REG. U. S. PAT. OFF.

LIQUID CHLORINE

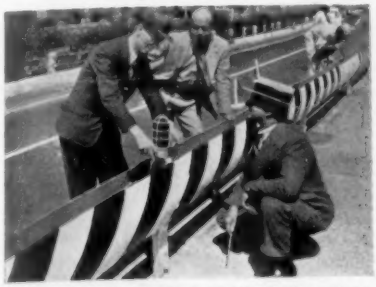
Traffic Control and Facilitation

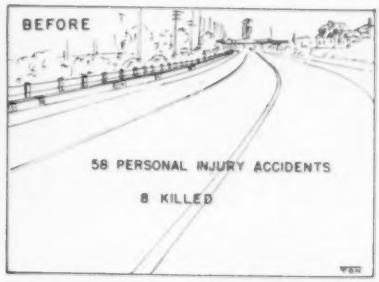
Conducted by Publications Committee, Institute of Traffic Engineers, 60 John St., New York

Paul L. Green, Chairman; George W. Barton, William C. Brandes, Edward H. Eames, Ralph W. Eaton, William G. Eliot, III, James R. Guthrie, Harry C. Koch, E. B. Lefferts, Miller McClintock, William R. McConochie, Theodore W. Matson, Robert A. Mitchell,

Narrow Steel Divider Makes Street Safer

By R. T. Dorsey
Traffic Engineer, Los Angeles, Calif.





ILLUSTRATIONS BY COURTESY OF NATIONAL CONSERVATION BUREAU BULLETIN, "GETTING RESULTS THROUGH TRAFFIC ENGINEERING," JANUARY, 1940

A physical barrier beats the white line. Author of this article at extreme left of group

RAMONA Boulevard, in the city of Los Angeles, leading immediately out of the downtown traffic area, was completed as a four-lane highway on April 20, 1935. There are no traffic crossings at grade, although a number of bridges that rest partially on pillars at the center line of this street have been constructed.

Because of lack of vehicular cross-traffic, speeds are exceptionally high, averaging between 45 and 50 miles per hour and resulting in a serious accident history. From the date of the opening until August 17, 1938, there were 58 personal injury accidents. Of the accidents noted, 69 persons were injured and 8 killed. Most of the serious accidents were caused by head-on collisions, sidewiping and driving into bridge abutments.

These facts indicated that a definite division of the roadway and the guarding of the center bridge abutments would have a remedial effect, making it impossible for traffic in opposite directions to conflict, and also protecting the center abutment. The need was quite evident, but what type of separation should be used, and how secure the necessary authorizations and appropriations in the shortest time?

Ramona Boulevard being bounded on one side by the Pacific Electric tracks and on the other side by very high hills, it was not possible to provide a wide neutral center zone. Furthermore, this method would have been very expensive and would have taken a long time because of delayed condemnation proceedings. Another problem was that, since the lanes were not as wide as those now marked on state highways, *it was necessary to find a satisfactory divider that would not take up more space than the two white center lines.*

In company with Clarence Schultz, engineer of Los Angeles, I inspected the U. S. Road Divider manufactured by the United States Spring & Bumper Co., Los Angeles, and there found a spring steel center-guard rail that appeared to be a natural installation for our particular need. Although the U. S. Tuthill highway guard has been successfully used on the sides of roads in all the western states for many years, no installation of the newly developed center road divider was in use. This installation connects the center pillars of two bridges 3,000 feet apart, requiring approximately 6,000 feet of guard-rail.

The separation was accomplished by taking two roadside guards and installing them back to back, using one post for mounting the two required brackets. The rails are 12 inches wide, convex in shape and fastened to spring-steel heat-treated brackets which are attached to the post near the ground level and are so formed that the two rails are approximately 5 inches apart. Because it was necessary to use as little road space as possible, the manufacturer developed a heat-treated spring steel post 4 inches wide and taking up only 3/4-inch road width. By using a special analysis spring steel, scientifically heat-treated, the post has a high tensile strength of 165,000 pounds per square inch. The special treatment of the posts gives great shock-absorbing assistance to the double-acting spring steel brackets on which the rail is suspended. These features give extreme resiliency and deflective action, allowing great absorption and diversion of shock, with minimum danger to passengers and to the vehicle itself. The convex rail presents a smooth surface at hub-cap height and is installed in sections of 12-foot centers on straight roads and 10-foot centers on curves.

An air hammer was used to excavate holes 12 inches square and 24 inches deep. The steel posts, split at the bottom for anchorage, were set in concrete. The spring brackets were bolted to the posts just above the ground level, allowing for quick and economical replacements or repairs.

To safeguard against any danger to night traffic, blinker lights were installed every 110 feet. The inside of the convex rail plate provided for an easy installation of the electric cable and of the bracket for the lights themselves. Also, to provide for greater visibility at night, the rail was painted with alternate black and white stripes, the white portion being covered with small spheres which reflect the rays of headlights. On the straight stretch a regular aluminum paint was used, with the blinker lights 100 feet apart.

Traffic and highway engineers are always confronted with the advisability or inadvisability of trying out new safety devices. Progress cannot be made and accidents cannot be reduced unless some engineers and some communities have courage and initiative to step out ahead. Careful observations will be made of the performance of this road divider. It represents a tremendous forward step in safe automotive operation.

Editorial Note.—A more recent installation has been made on a San Francisco bridge, and the manufacturer reports that this road divider is now being considered by numerous municipalities.

IMITATED...
but not EQUALLED!!

DUAL WAS FIRST company in the world to install parking meters and develop plans for parking meter control.

DUAL IS THE MOST practical and dependable meter—backed by greater experience in more cities. More than 70 cities have installed in excess of 29,000 DUAL METERS.

DUAL METER BEST according to *numerous engineers' tests.*

DUAL COMPANY ALSO FURNISHES expert advice and counsel on proper layout of meter installation and proper type of meter to meet each parking problem.

DUAL OWNS the following parking meter patents: Manual—D-98810, 1,879,438, 2,039,544, 2,065,075, 2,088,154, 2,088,300, 2,088,301, 2,118,318, 2,137,111; Automatic—D-107,577, 2,168,302, others pending; Electric—2,061,875, 2,114,534.

THE ORIGINAL CARL MAGEE METER

DUAL PARKING METER CO.
Commerce Exchange Building — Oklahoma City, Oklahoma

Uniform THREADING FOR EASY REPLACEMENTS

Hays gauge-checks threading to assure uniform thread fits which means faster installation in the field. Any Hays coupling will fit any Hays stop of the same standard threading.

Over 70 years of constant checking to maintain highest manufacturing standards makes Hays your dependable source of supply for underground copper, brass or lead service goods. In changing over to copper, particularly, you will be interested in the economy of the Hays Method because of its easy adaptability to your present piping method.

Visit the Hays booth at the A. W. W. A. Convention, April 21st to 25th.

HAYS MFG. CO., ERIE, PA.

HAYS
PLUMBING BRASS
BATH FIXTURES
COPPER PLUMBING
GAS SERVICE GOODS
WATER SERVICE GOODS
IRON PRODUCTS
TAPPING MACHINES

Signs Speed Seattle Traffic

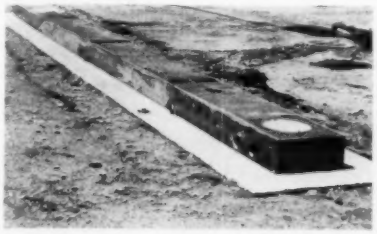
By J. W. A. BOLLONG
Traffic Engineer, Seattle, Wash.

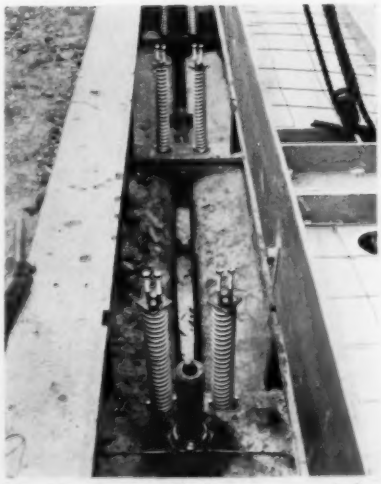
TRAFFIC signals in the business district of Seattle, Wash., are operated progressively by controls located in a room at headquarters. The electrical contacts made on each of these controls are transmitted to relays located at the particular intersection which the control regulates. The dials for each intersection are clearly visible on the switchboard, so that the progression north and south and east and west can be seen.

A "marginal" relay in the relay box at the corner lights a pilot lamp on the switchboard when a signal light ceases to function. Our operators have an emergency car equipped with the police radio, so that they can be called at any time or place and thus help us keep all the signal lights burning with never more than a 30-minute outage for any one of them.

A particularly effective type of signal protection may be seen at the intersection of a dual roadway in the industrial section of Seattle, at East Marginal Way and West Spokane Street. Here, six timing changes are made during the day to fit the traffic tides. These signals are coordinated with railway operation, so that the approaching trains observe the signals.

The photograph shows the very satisfactory installation of signals made on August 5, 1937, at the intersection of 4th Avenue South and Airport Way, the intersection of U. S. 99 and 10. The only change needed is to group the controls to conserve street space.





Movable Fins Described on page 95 of the March, 1940, issue

Schoolboy Sign Found Effective

THIS BOY AND DOG SIGN is being used at all school crossings in Burlington, Vt., and motorists say it is an aid in drawing their attention to the school zone. From a distance it looks like a real boy crossing the street. The boy's cap is blue; sweater a bright red; trousers blue; book blue with white letters, and the dog a reddish brown and white. The sign is weighted at the base so that it cannot be blown over.

This idea may be an aid to other communities faced with a school-crossing problem.

ARTHUR THALACKER,
Chief of Police, Burlington, Vt.

This sign means: Watch out for the school children!

KARPARK AUTOMATIC METERS

are beyond comparison!

THERE are four major divisions to a parking meter—housing—timing regulator—coin mechanism and signalling device. In each one of these divisions Karpark offers exclusive features that place Karpark Automatics above comparison.

Housing—Entire housing die cast of Zamac—a material so tough that hydraulic jacks and Y. & T. padlocks are made of it. Tensile strength: 40,300 lbs. per sq. in.

Timing—The Karpark timing mechanism is made by the Herschede Hall Clock Co.—makers of fine clock machinery for three generations. Rugged pendulum escapement—all arbors and pinions machined from clock brass or stainless steel.

Coin Mechanism—Karpark is the only automatic meter with a power-actuated coin mechanism. Completely foolproof.

Signalling Device—Karpark has distinctive and separate timing dials and signals to indicate both the allotted and overtime periods.

The entire meter is mounted on a 2½" post having almost twice the strength of a 2" post.

KARPARK Meters licensed under VEHICULAR PARKING, LTD. patents.

THE KARPARK CORPORATION

420 LEXINGTON AVENUE • NEW YORK, N. Y.

In SEWAGE Disposal Plants the emphasis should be on the word SEWAGE— BUT,— in cities not using the O.K. CHAMPION SEWER CLEANERS

a whale of a lot of foreign matter, roots, cinders from winter ice non-skid protection, debris, etc., all increase unnecessarily the sewage disposal cost.

It is very simple and economical to keep ALL your sewers clean, free flowing and efficient with OK CHAMPION cleaners. Even very old sewers respond wonderfully and become rejuvenated. Details gladly supplied.

CHAMPION CORPORATION

4716 Sheffield Ave. Hammond, Indiana

FREE Catalog of

Safe

Playground Apparatus

Swimming Pool Equipment

Whether you want one unit or complete playground equipment . . . this FREE illustrated catalog shows every safe playground, beach and swimming pool apparatus for individual and group recreation. Each EverWear unit is durable, economical, safe . . . designed for definite play and health functions. Tear out and mail this ad TODAY. Address Dept. A.

EverWear

MANUFACTURING CO.

DEPT. A SPRINGFIELD, O.

Manufacturers of ★ EverWear Playground Apparatus ★ Economy Playground Apparatus ★ EverWear Swimming Pool Equipment ★ EverWear Basket Ball Backstops.

Law Enforcement—For Whom?

Can the "Best People" Be Made Good Citizens?

MAYOR CARLYLE B. STAIR of the village of Downers Grove, Ill., gave a local church group something to think about when he based a recent talk on this quotation from Joseph Wright, head of the Library of Municipal Research at Harvard University, to be found in William Bennett Munro's book on Municipal Government:

"It is my theory that men who are honest, competent and fearless in the conduct of public office (while making some friends who understand their value) are continually building up an army of discontent and dissatisfaction which will surely swamp them. In the course of their work, they must deal justly with those who do not want justice; they must deny those who desire, and have been accustomed to, special privilege, and they must disappoint those who expect more of government than it is able to accomplish."

Making it clear that he was dealing in generalities and was not criticizing any specific individual or business, Mayor Stair analyzed Mr. Wright's statement as applied to the Illinois village:

Those Who Do Not Want Justice

1. *Conscientious public officials "must deal justly with those who do not want justice."* Who is this man who doesn't want justice? Here we have a perfect paradox. Generally, he is a man that wants to see justice done at all costs, providing the justice is meted out to the other fellow. For example, he deplores speeding on a public street. He knows that it endangers life and limb, and the offender should be dealt with most severely. But lo and behold, he has to make the 7:15, and he must "step on it" to do it. It's impossible to take the 7:21, because that gets him in the office 5 minutes later, and besides, his bridge partners will be disappointed. Then comes that dismal day when he is pulled over to the curb, given a ticket, only after a burst of righteous indignation and a few caustic comments as to how the village is being run. Soon thereafter, he is hailed before the Police Magistrate. What happens? The arresting officer was wrong—he did not clock his speed correctly—must have been mistaken—and a multitude of other reasons. But the Squire, in his all-seeing wisdom, penetrates this barrage and assesses a *just* and *equitable fine* (not the minimum). What is the result? A new recruit for the army of discontent and dissatisfaction.

Seekers of Special Privilege

2. *Conscientious public officials "must deny those who desire, and have been accustomed to, special privilege."* —Who is this man who desires special privilege? He is the man who by reason of his importance in the village, and his multitude of friends, can park his car where no parking is allowed, or park all day in a two-hour parking zone. What happens when that privilege is denied by public officials? Another recruit in the army of discontent and dissatisfaction.

Now in this category comes that person or firm that sells either materials or services to the village and who for years has, because of old time's sake, enjoyed the almost exclusive privilege of monopolizing the supplying of the village needs in his particular line. Along comes another one of those dismal days, and lo and behold, prices are scrutinized, bids are taken, unnecessary purchases are eliminated, and what happens? Pocketbooks are touched and special privileges are gone and this time we have recruited a few generals in this army of discontent and dissatisfaction.

Further, comes that business which is required by the ordinances of our village to be licensed and which, for some unexplained reason, for years has failed to pay for such license. Then comes that dismal day when public officials seek to correct this situation, and again we have a burst of indignation and the hasty joining of our army of discontent and dissatisfaction.

Those Who Expect the Impossible

3. *Conscientious public officials "must disappoint those who expect more of government that it is able to accomplish."* Who are those who expect more of government than it is able to accomplish? Mrs. Finkelstein wants all the weeds in all the vacant lots in the village cut, because she has hay fever. Mr. Generous wants to furnish practically free fire protection service to all the contiguous territory outside the village limits. Mr. Bright wants a street light in the middle of his block or in front of his place of business. Mr. Goodfellow wants all the salaries of every municipal employee raised 10 per cent. Mr. Subdivider wants all the roads improved in his subdivision.

Now all these requests are reasonable, and are things that have been done in the past. People who have grown accustomed to these services naturally do not like to give them up. But there comes a day when these services must necessarily be curtailed, because continued deficit financing leads only to bankruptcy. When these services are curtailed, what is the result? Now we have not merely a single recruit, but *platoons* added to our already growing army of discontent and dissatisfaction.

Let us go back for just a moment and repeat what Mr. Wright has said: "It is my theory, that men who are honest, competent and fearless in the conduct of public office (while making some friends who understand their value) are continually building up an army of discontent and dissatisfaction, which will surely swamp them."

I have shown you how that army of discontent and dissatisfaction is recruited here in our own little village. Now let us inspect this army. A very significant fact about this army is that it isn't large. Comparatively speaking, it is a *very small army*, and if it stopped there, it would be harmless, and this learned authority would never have expounded such a theory. Why doesn't it stop there? Because toes have been stepped on—pocketbooks have been touched—and, as a result, each member of this small army is vindictively anxious to even the score. Because of this malicious desire, an effort is made, not only by the spoken but by the printed word, to belittle the efforts of conscientious public officials and to spread this discontent and dissatisfaction to others.

Why should such a deplorable condition ever prevail? After all, the public officials have no more than carried out the wishes and interests of the majority of the taxpayers—true, at the expense of a few privileged individuals, but most assuredly for the benefit of this majority.

What Are We Going to Do About It?

Now, here we are, on this Sunday morning, and what are we, as a Christian community going to do about it? The only suggestion that I can make is that each and every one of us present take a *close and impartial interest in our village government*, and by so doing enable ourselves more clearly to see affairs in their true light. Then, and only then, are we in a position to accurately and intelligently cooperate, to secure honest government, from which only good can flow.

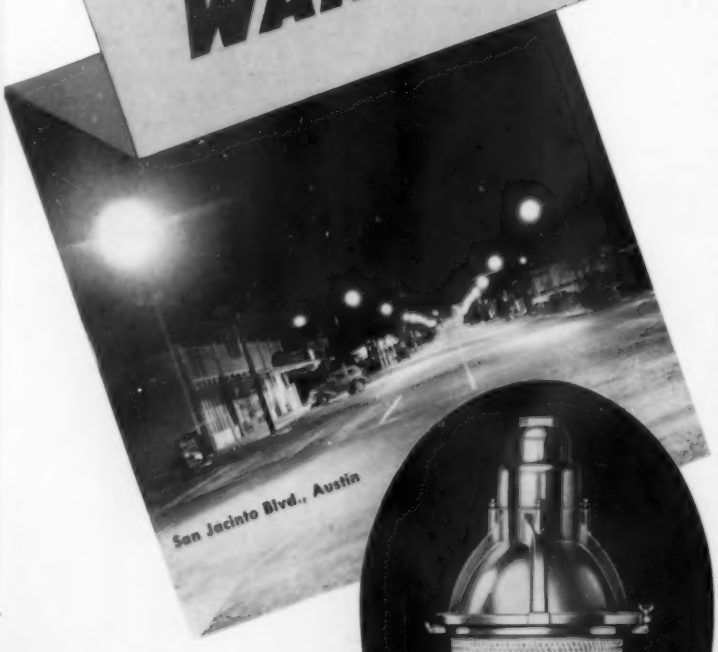
You may quote freely from THE AMERICAN CITY, but in so doing, please give credit to this magazine.

Sixth Street, Austin, Tex.

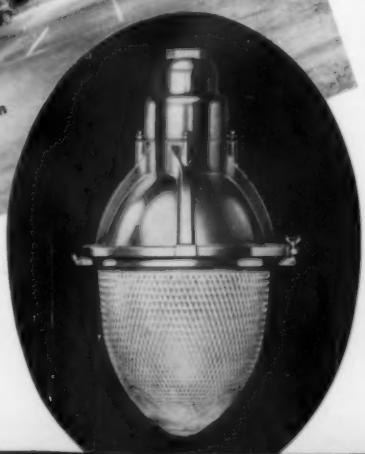
HERE'S WHAT AUSTIN WANTED -- and Got!

The city executives and civic leaders of Austin, Texas, knew definitely what they wanted when they planned the re-lighting of bustling Sixth Street and beautiful San Jacinto Boulevard. They wanted *visibility* that would assure safe driving and safe walking after dark . . . and *distinctive appearance* worthy of Texas' capital city.

The photographs tell the story of how completely Austin succeeded . . . getting *both* visibility and good appearance by choosing L-M CONTROLITE Luminaires mounted on L-M Union Metal Steel Standards. Note the results . . . the concentration of light on the street, the even distribution of light from curb to curb, the absence of light on the upper stories of buildings. It's this kind of lighting efficiency, combined with genuinely distinctive appearance, that makes the L-M CONTROLITE the logical luminaire for boulevard lighting. Ask your L-M representative for full details.



San Jacinto Blvd., Austin



L-M Controlite

LINE MATERIAL CO.

MILWAUKEE, WISCONSIN

Outdoor Lighting

Streets—Highways—Floodlighting

Hartford's Famous Lighting Shows a Profit

Proof That Good Lighting Reduces Accidents

By THOMAS J. SPELLACY
Mayor, Hartford, Conn.

ANALYSIS of two full years' accident experience on a number of streets covered by Hartford's relighting program shows a saving of 11 lives and a net saving of $60,000 in property damage and personal injuries after deducting the cost of the increased lighting.

The first stage of the relighting program consisted of increasing the lighting intensity about 2½ times on all or certain sections of 14 streets, totaling 10 miles. At the same time lighting on other sections of some of these streets, having practically identical traffic conditions and totaling about 10 miles in length, was not changed. A complete record was made of all reportable traffic accidents on the relighted sections, the unchanged sections, and the rest of the city as well, for a full year before relighting and for two years after relighting. The results are given in the following tables:

TABLE I—SUMMARIES OF THREE YEARS' ACCIDENT RECORD

	Number of Accidents							
	14 Relighted Streets		Unchanged Sections		Rest of City		Entire City	
	Day	Night	Day	Night	Day	Night	Day	Night
July 1 to June 30								
1936—1937 before change	232	248	222	195	686	460	1140	903
1937—1938 after change	217	133	246	203	680	477	1143	813
1938—1939 after change	207	95	224	159	823	447	1254	701
Per Cent Change								
1937—1938 over 1936—1937	—6.6%	—46.3%	+10.8%	+4.1%	—.08%	+3.6%	+.02%	—9.9%
1938—1939 over 1936—1937	—10.7%	—61.7%	+.01%	—18.4%	+19.9%	—2.8%	+10.%	—21.3%

TABLE II—ACCIDENTS PER MILLION VEHICLE MILES

	Relighted Sections		Unchanged Sections		Rest of City		Entire City	
	Day	Night	Day	Night	Day	Night	Day	Night
1936—1937	6.63	21.30	6.88	17.63	3.92	8.00	4.69	11.28
1937—1938	5.88	10.87	7.08	16.01	3.56	7.57	4.34	9.23
1938—1939	4.93	6.78	7.46	15.90	4.52	7.45	4.91	8.23
Per Cent Change								
1937—1938 over 1936—1937	—11.3%	—49.%	+2.9%	—9.1%	—9.1%	—5.3%	—7.4%	—18.1%
1938—1939 over 1936—1937	—25.6%	—68.1%	+8.4%	—9.8%	+15.3%	—6.8%	+4.6%	—27.%

Table I shows that the relighted sections had a decrease in night accidents of 46.3 per cent the first year after relighting, and 61.7 per cent the second year. At the same time the unchanged sections as well as the rest of the city showed an increase in night accidents the first year and a comparatively small decrease the second year.

Table II shows the same results expressed in terms of accidents per million vehicle miles, which takes into account the amount of traffic volume. For the same unit of traffic there was a decrease in night accidents on the relighted sections of 49 per cent the first year, and 68.1 per cent the second year, while the unchanged sections and the rest of the city showed very much smaller decreases.

The reduction in pedestrian fatalities is even more impressive. The pedestrian is the sufferer in 60 per cent of urban accidents, and about three-fourths of these occur at night, in spite of the fact that night vehicular and pedestrian traffic is only from one-third to one-fourth as heavy as day traffic. In the two years prior to relighting there were twelve night pedestrian fatalities and in the two years after relighting there was only one fatality, a saving of eleven human lives.

The total cost of traffic accidents is difficult to determine. However, data for the amount of property damage are obtainable quite accurately from state motor vehicle departments, and data on the cost of personal injuries are obtainable from insurance companies which have paid thousands of claims. "Excess night accidents," or the number by which night accidents exceed day accidents for the same unit of traffic volume, are obviously due to poor visibility, and the cost of these excess night accidents, expressed in terms of property damage and personal injury, becomes the cost of poor visibility.

The facts are that during the year prior to relighting, the cost of excess night accidents on the 14 streets amounted to $55,275, including property damage and personal injuries, but not including any value on human lives lost. The first year after relighting, the cost was $18,725, and the second year $13,416, or a total saving for the two years of $78,500. From this is deducted the cost of increased lighting, amounting to $16,800, which leaves a net saving of $61,700. Or, summarizing the results in another way, if the city spends $840 per mile per year for better street lighting, it gets not only this $840 back, but also a bonus of $3,000 a mile a year.

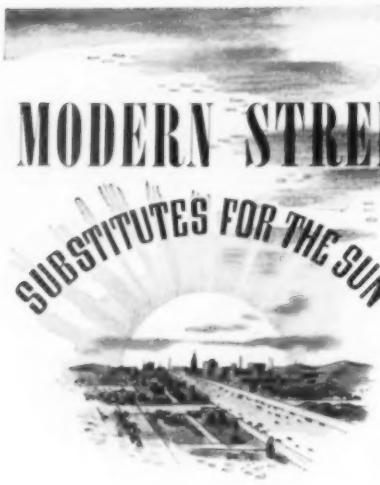
It becomes obvious from these figures, which are a matter of record, that adequate street lighting is a quick, cheap, and sure method of reducing community costs. However, disregarding the very large saving in dollars made possible by street lighting, for an expenditure of $70 per month per mile Hartford succeeded in saving the lives of 11 of its citizens on 10 miles only of its streets. It would seem that a community that fails to provide similar protection for its citizens places a rather low value on human life.

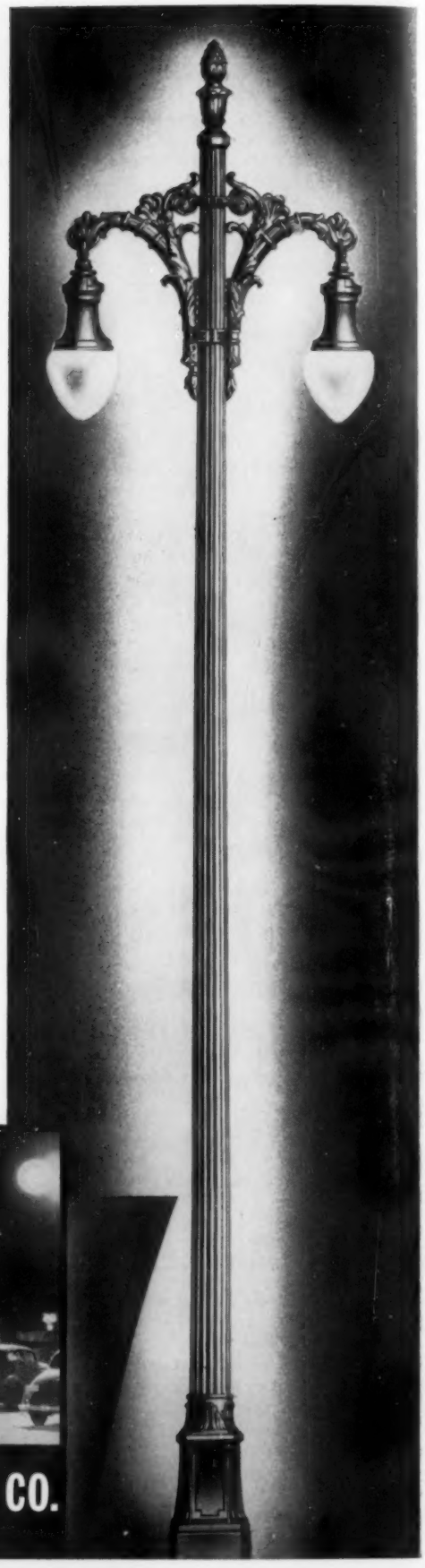
Bright Nights in Van Wert, Ohio

THE BUSINESS AREA in Van Wert, Ohio, population 8,500, presents a new appearance at night since the installation of a high-visibility street-lighting

MODERN STREET LIGHTING

SUBSTITUTES FOR THE SUN *in* PORTLAND INDIANA





● When the sun goes down in progressive Portland, Ind., modern street lighting stands ready to carry on. Here, citizens are free to go about their business or pleasure after sundown on streets paved with light. Accidents chargeable to poor visibility will be eliminated; lives will be saved; property will be better protected; in short, Portland, Indiana is a safer place in which to live and work with the installation of modern street lighting.

Union Metal steel standards make important contributions to the effectiveness of this lighting system. They place the luminaire higher up above the street for better light distribution. Their all-steel construction insures lowest maintenance cost and maximum safety. And lastly, use of these tapered, fluted standards results in an attractive installation to which the community points with pride during the day as well as at night.

Union Metal offers steel standards of a size and type to meet every need. Let our engineers analyze your lighting problems and show you how to *make your streets safer after sundown.*

THE UNION METAL MANUFACTURING CO.
CANTON, OHIO

system employing 48 pendant-type General Electric luminaires with 10,000-lumen incandescent lamps. The new lights are mounted at the end of 6-foot brackets on Union Metal poles, 23 feet above the pavement. Poles are staggered and on each side are spaced 200 feet apart. The system replaces one of ornamental upright luminaires with 2,500-lumen lamps with a mounting height of only 12 feet. City officials, Chamber of Commerce, merchants and citizens are pleased with the new system.

E. H. HUMPHREYS,
Executive Secretary, Chamber of Commerce, Van Wert, Ohio.

The city of Van Wert, Ohio, is proud of its modern street-lighting system

Uniformly Lighting a Black-Surfaced Street

By M. F. LINNAN
City Engineer, Wauwatosa, Wis.

RESURFACING West North Avenue, the main traffic artery in Wauwatosa, prompted the installation of a complete new lighting system, considered among the best in Wisconsin.

Originally, West North Avenue had a concrete surface with a good reflection factor. After many years of use, it became apparent that a resurfacing job was needed. Work was begun on one section of the street, and a black top dressing was used. It became apparent immediately that this treatment, extended throughout the street, would soak up a good portion of the existing street illumination from both street lamps and automobile lamps.

In fact, while driving over West North Avenue one night, the author thought his headlights had gone off as soon as he had come to the new street resurfacing. Such a condition was hazardous, and plans were made to correct it by the installation of a better street-lighting system.

The Street Lighting Service Co. of Chicago was engaged to install 442 modern luminaires on American Concrete Hy-Lite ornamental standards fed by 32 miles of underground parkway cable, and about 8 miles of pole-and-bracket cable. In the business district the lights are mounted 25 feet high and spaced 80 feet apart and staggered; in the residential district the mounting height is 20½ feet, and the spacing is 200 feet staggered. All residential poles have 6-foot brackets.

The lighting on West North Avenue, for the business section and the residential intersections, is so arranged as to give uniform street lighting to eliminate accidents, especially to pedestrians. At each intersection a lighting unit is installed on the right-hand side of the driver beyond the intersection, to provide silhouette as well as direct lighting of any person or object in the driver's path.

The cost of the system, apportioned among the property owners in both the residential and business sections, would be about 28 cents per front foot in the residential section and 65 cents per front foot in the business section.

The luminaires eliminate upward strays of light heretofore wasted in the night air. Holophane refractors, permanently sealed to the reflectors, exclude dust from the luminaires and prevent excessive breakage of refractor bowls. Another feature of these units is the deflecting shield mounted inside the globe, which prevents excessive light from shining directly into the house along the street.

The 442 units now in service are only the start of the 2,000 units that will be installed under this modernization program.

Sodium Light for Safety

ONE OF THE EARLY PIONEERS in the use of sodium lights for highway illumination was the town of Amherst, N. Y. In November, 1937, the town installed five miles of the golden lighting on Route 5, a heavy-traffic New York highway which passes through Amherst to Buffalo on the west, and

Note the spotty light at left, and the even illumination in the right-hand view, explained by City Engineer M. F. Linnan, above

SYSTEM STANDARDIZATION

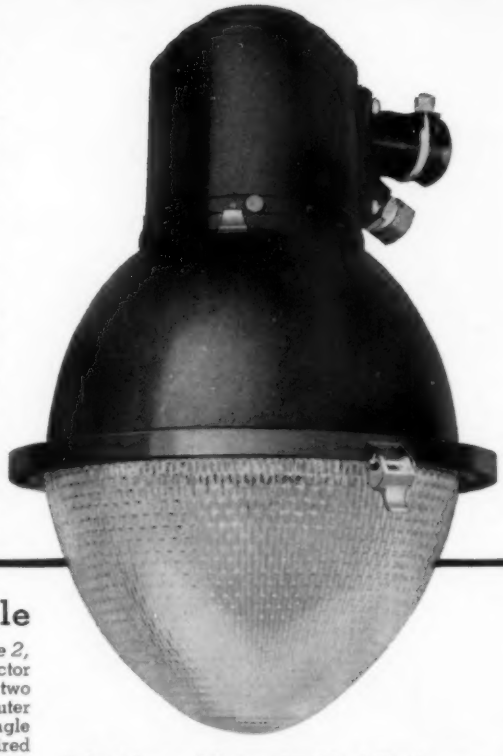
with Westinghouse Universal Line

METAL HOOD LUMINAIRES

Development of new Westinghouse Refractolux and Reflectolux Luminaires with Universal Metal Hoods greatly broadens the selection of equipment for TRAFFIC SAFETY LIGHTING. This new Universal Line permits communities to standardize on one luminaire hood and have complete flexibility for years to come in mounting and wiring arrangements, glassware and light distribution.

The die-cast aluminum hood has a side opening to which a variety of Conversion Plates can be attached. These plates are made with extensions for bracket mounting, porcelain bushing, lead entrance glands, etc. Thus the hood, and the whole luminaire, becomes adaptable for top or side mounting . . . for inner or outer wiring. The receptacle is made of wet process porcelain, and the flashover voltage from the receptacle current carrying parts to hood (ground) is over 25,000 volts dry test.

Investigate this new Westinghouse Universal Line today. Call your nearest Westinghouse Lighting Specialist, or write Westinghouse Electric & Manufacturing Co., Lighting Division, Edgewater Park, Cleveland, O.



Refractolux and Reflectolux Metal Hoods are available for top mounting, inner wiring; for top or side mounting, inner or outer wiring; for side mounting, inner or outer wiring.

Conversion Plates Interchangeable

Plate 1, for top mounting; inner wiring; plain conversion plate. *Plate 2,* for top mounting; side outer wiring with one gland for double conductor cable. *Plate 3,* for top mounting; side outer wiring with two glands for two single conductor cables or wires. *Plate 4,* for top mounting; side outer wiring with wet process porcelain bushing for one double or two single conductor cables or wires. *Plate 5,* for side bracket mounting; inner wired through bracket; top of Hood closed. *Plate 6,* for side bracket mounting; outer wired through gland for double conductor cable. Top of Hood closed. *Plate 7,* side bracket mounting; outer wired through wet process porcelain bushing for one double or two single conductor cables or wires. Top of Hood closed.

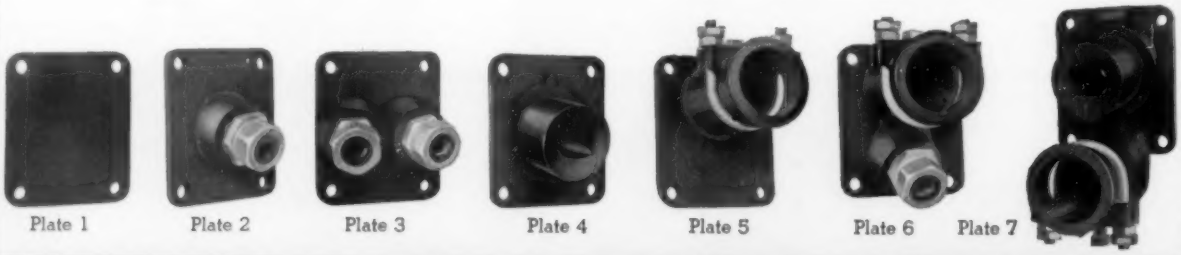


Plate 1 Plate 2 Plate 3 Plate 4 Plate 5 Plate 6 Plate 7

Westinghouse Lighting Equipment

Death moved from Route 5 through Amherst when sodium lights were installed. Chief Evans at right

to Rochester, Syracuse, and Albany on the east. The reason for this new lighting was that four persons had been killed in night accidents in the first ten months of 1937, while not a fatality had occurred in the daylight during this time, although traffic is considerably heavier in the daylight hours on this route.

Amherst decided to install sodium vapor lamps in an effort to cheat death after dark on Route 5. With the help of the Buffalo Niagara Electric Corporation, the sodium lights were installed in a staggered arrangement at 200-foot intervals along the six-strip highway. The 10,000-lumen lamps burn in a horizontal position in an airplane-type reflector mounted 28 feet above the pavement on arms extending 8 feet out over the highway.

E. H. Evans,
Chief of Police, Amherst, N. Y.

It's That Yellow Light! Warning—Visibility

Sodium Lighting Was Selected by Chief Engineer Arthur Engh and Electrical Engineer O. H. Taylor of the Chicago Board of Local Improvements, for the new $675,000 Laramie Avenue viaduct, opened to traffic February 4. This 1,800-foot viaduct carries a highway over the tracks of the Great Western and the Baltimore and Ohio Railroads. It will relieve the overcrowding of Cicero Avenue one-half mile to the east, and of Central Avenue one-half mile to the west—the only crossings that were available to Laramie Avenue traffic.

Modern high-visibility safety lighting is provided by the 19 General Electric sodium units mounted on concrete standards 25 feet above the pavement and staggered 110 feet apart. The golden-yellow color of the sodium luminaire is particularly well suited to viaduct lighting, for it acts as a caution signal to motorists and affords good visibility of the approaches. And since viaducts are not equipped with shoulders or parking space for motorists in trouble, the silhouette lighting provided by these luminaires lessens the likelihood of motorists crashing into stalled cars.

George W. Barton, Safety Director, Chicago Motor Club, who made a test with the new street-lighting "Evaluator," says the visibility is three times better than that on LaSalle Street, Chicago, and within five per cent of the visibility on Grand River Avenue, which, according to L. J. Schrenk, General Superintendent, Public Lighting Commission, Detroit, has been largely responsible for saving the lives of eleven persons during the last three years.

Another outstanding sodium-lighted bridge is the 1¼-mile pontoon structure under construction across Lake Washington on U. S. Highway 10, to shorten the eastern approach to Seattle by 14 miles. The 131 open-type sodium luminaires with 10,000-lumen lamps will be mounted 24 feet high on Union Metal poles spaced 175 feet apart along the 59-foot-wide span. The interior of a 1,487-foot twin-bore tunnel approach will be lighted by sodium; tunnel entrances by mercury lights.

Modern Street Lighting Coming to Bridgeport, Conn.

BRIDGEPORT, CONN., is one of the cities that curtailed street lighting in 1931, and only recently it authorized a resumption of service to the amount of the former cost. On the initiative of The United Illuminating Co., however, the present ornamental columns and magnetite arcs dating as far back as 1911 will be replaced by a modern system of Union Metal poles carrying on 4-foot brackets General Electric 79 R luminaires with refractors.

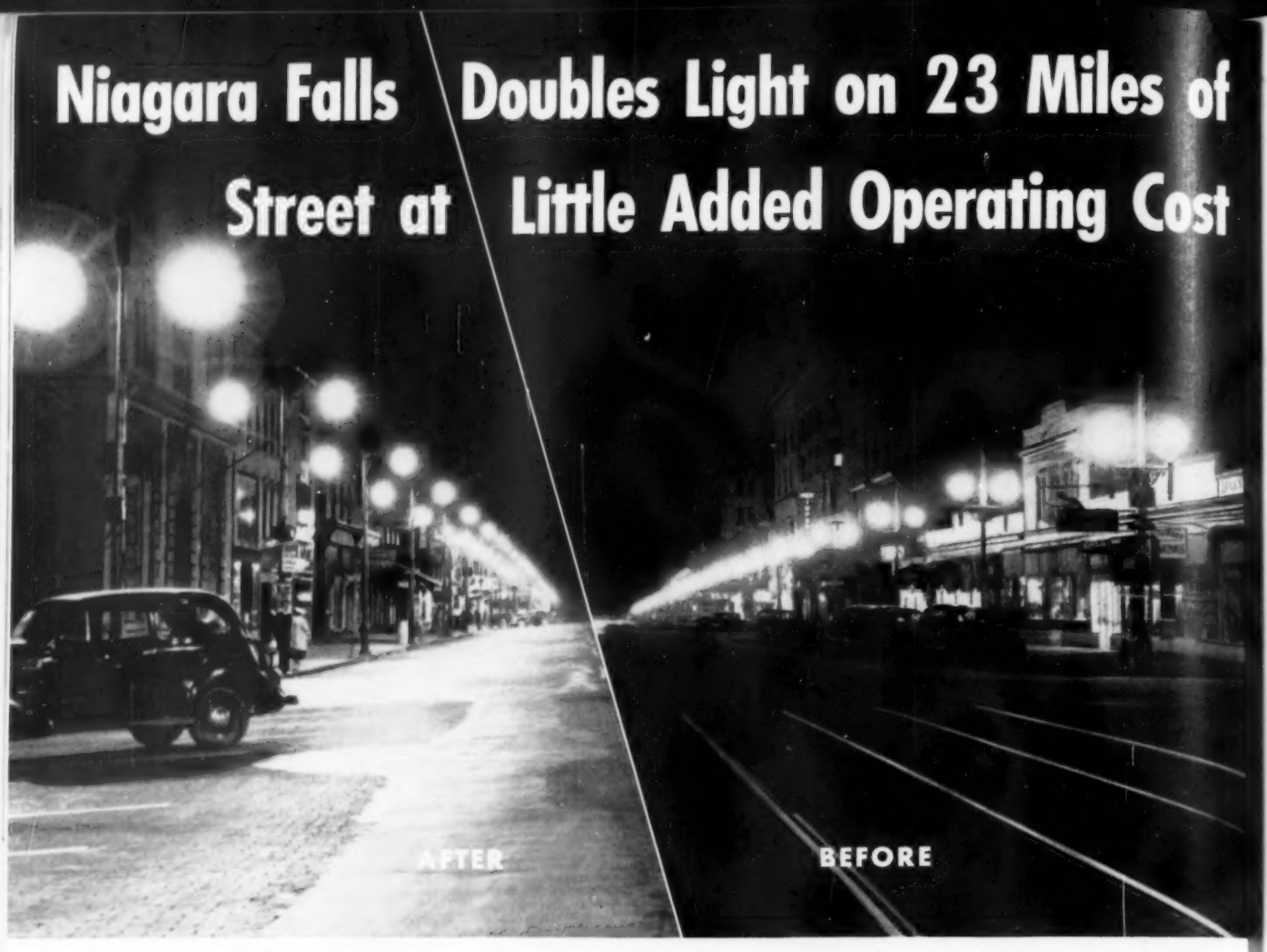
The present white-way installation mounts the old arc lights only 14 feet to light center, spacing 65 feet staggered. Only 379 of the 603 units have been lighted during the last nine years.

The new appropriation is for 321 units with 22-foot mounting height, to cover the business district of five streets (plus 163 Form 9 units on 14-foot columns, in side streets) also some new lines totaling 5,750 feet at the outer ends of State, Stratford and East Main Streets. All the lines are underground. The 6,000-lumen lamps will furnish on State Street alone 310,000 effective lumens against the present light output of 48,000 effective lumens.

To achieve this improvement, the city will pay $41,930 per year compared with $42,248 in 1930. The construction cost to the illuminating company will be approximately $100,000. A demonstration unit is already erected and the entire improvement will be completed by late fall.

Thus far the game would seem to be going in favor of the municipality, taxpayers, motorists and general public, with the company in the position of philanthropist. It is reasonable to expect, however, that the new lighting will be so obviously the right step that the modern system may be extended throughout the city.

Niagara Falls Doubles Light on 23 Miles of Street at Little Added Operating Cost



NIAGARA FALLS had one of the country's *finest* luminous-arc street-lighting systems, yet it recently relighted 23 miles of street for *better* night traffic safety. More than 1000 arc lamps were replaced with modern, efficient incandescent luminaires. The results? Double the illumination on the street surfaces, and uniform pavement brightness—two important factors that greatly increase safety and facilitate the movement of night traffic. The increase in operating cost? It's negligible because today's G-E luminaires direct 115 per cent more of the light on the pavement. Wasteful skyward light is eliminated.

Let us help you modernize your street lighting; it's easier than ever before, and costs less than you might expect. For further information ask the nearest G-E office for a copy of GEA-2870, "A Proved Plan for Saving Lives," or write General Electric, Schenectady, N. Y.

City Manager W. D. Robbins, J.E.Costello and C. H. Anderson of Buffalo Niagara Electric Corp., and Adin W. Chase, City Electrician, looking at Form 81 luminaire

CITY OF NIAGARA FALLS
STATE OF NEW YORK
OFFICE OF THE CITY MANAGER
CITY HALL

October 20, 1939

Mr. Charles G. Moore
c/o General Electric Company
201 Falls Street
Niagara Falls, New York

Dear Sir:

In regard to the new street lighting equipment which was recently installed in Niagara Falls, I wish to state that we consider this a very good investment. While Niagara Falls has always had its streets well lighted, we are satisfied that the new equipment is giving us very much more light for the money than we have ever had before.

In our opinion, the new street lighting system will materially decrease our night traffic accidents.

Very truly yours,

W. D. Robbins

CITY MANAGER

GENERAL ELECTRIC

500-363

Improving Municipal Administration

Current Items from the Public Administration Clearing House

Public Housing Projects Need Low Utility Rates

THE RATES ON GAS, ELECTRICITY and other utility services to public housing projects must be scaled down to a level commensurate with other costs, or rents in these projects are likely to be so high as to prohibit financial assistance by the Federal Government, a report from the legal committee of the National Association of Housing Officials points out.

Aid from the United States Housing Authority to local authorities is granted only if project rents can be made low enough to serve the lowest income group. If rents are high, it is impossible for the lowest income families to live in the projects; consequently, if utility rates, which are an item of rent, are so high as to make low rents out of the question, the projects can get no Federal aid.

Statistics cited from the United States Housing Authority show that local housing authorities throughout the country have succeeded in so reducing rents in the large-scale projects that the charges for utility services are usually one-third to one-half as much as the charge for shelter itself. In some cases, utility charges even equal or exceed the charge for shelter.

In typical public housing projects in the South, charges for utility services may add as much as $4 a month to the average charge for shelter, which ranges from $7 to $12.25, the report says. In the North, such utility charges range from $6 to $7.50, while comparable shelter charges may reach $21.

The report gives reasons why local housing authorities are justified in requesting lower utility rates for their tenants than may be charged other home-users in the community:

Although public utilities, as a condition to their franchises, must serve all customers without discrimination, the courts have consistently recognized that this requirement of uniformity extends only to members of like or similar classes. A classification of consumers in the housing projects as "different" is therefore not unlawful discrimination.

Differences in the type of service furnished to low-rent housing projects also entitle them to a special rate classification. Electric service, for example, can be supplied a multiple dwelling project at less cost to the utility, since there need be no individual meters, transformers, electric bills, etc.

In a low-rent housing project, the utility acquires many consumers who otherwise would be unable to use electricity at all, and the large volume of consumption in many cases also justifies special rates.

Housing has been declared by legislative bodies and sustained by the courts as a public use, which automatically puts it in the group of public institutions deserving of favorable utility rates.

WPA Wages Contribute Over Half of Urban Relief Bill

WAGES FOR WORK PROJECTS ADMINISTRATION EMPLOYEES accounted for 56 per cent of the $1,262,547,000 relief bill for 116 thickly populated urban areas in 1939. This is shown in an article on relief expenditures to be published by the International City Managers' Association in its 1940 Year Book.

The 56 per cent represents $710,912,000 paid by the Federal Government to WPA workers last year. It is pointed out that in 1938, WPA wages amounted to 63 per cent of the total relief bill for these urban areas, which are cities or counties containing cities of 50,000 or more population.

The amount spent by the local governments of these urban areas for general relief in 1939 totaled $329,327,000 —or about 26 per cent of the total relief bill, according to the Association. Per capita expenditures ranged from one cent to $15.18 a person and included contributions for materials for WPA projects, direct relief in cash and goods, and aid to needy veterans. The average per capita expenditure for all the areas was $4.93.

A total of $221,802,000 was spent for aid to special groups of unemployables, such as the aged, the blind, and dependent children—the figures representing 17 per cent of the total expenditures. A part of the funds for such aid was contributed by the Federal Government under the Social Security Act. On a per capita basis, expenditures ranged from 80 cents to $15.22. However, per capita costs were over the $10 mark in only five cities; below the $1 mark in only three cities.

New Committee to Study City Highway and Mass Transportation Plans

A STUDY of city highway and mass transportation programs, and the relation of each to the other and to problems of property rehabilitation, will be made within the next four months by a five-man committee appointed by the American Society of Planning Officials. Named to the committee are I. S. Shattuck, planning consultant, Oakland, Calif.; H. F. Aumack, Engineer, City Plan Commission, Spokane, Wash.; Burton W. Marsh, Director, Safety and Traffic Engineering Department, American Automobile Association, Washington, D. C.; D. Grant Mickle, Michigan State Police Traffic and Safety Engineer; and L. Segoe, planning consultant, Cincinnati, Ohio.

Among the problems to be studied will be that of developing adequate parking facilities for the thousands of automobiles which would enter a large city's business district over a modern system of superhighways, if such a system were constructed; plans for handling traffic flow during the heavy morning and evening periods; and the relationship of a superhighway system to blighted residential and property areas through which it would pass. There might be a need, the Society points out, for a program treating both the highway system and the redevelopment program as a part of a broad plan for community development.

The need for a system of superhighways will be studied in relation to such mass transportation facilities as streetcar, bus and electric systems. Where excellent transportation facilities exist, where they are rapid, convenient and inexpensive, the people may be inclined to use these facilities and leave their automobiles at home.

The committee will submit a report at the National Conference on Planning to be held in San Francisco July 8 to 11.

Two Texas Cities Set Up Complaint and Information Bureaus

CITIZENS OF SAN ANTONIO AND DALLAS, Texas, now take their queries and complaints about city business directly to special bureaus of information and complaint recently established in their city halls, the International City Managers' Association reports.

The San Antonio bureau, set up January 15, handles inquiries and complaints for all city departments except the health service. In addition to having general informational material on file, the attendant directs inquirers to

You Get More For Your Lighting Dollar With

ALZAK® ALUMINUM REFLECTORS

MADE BY:

Crouse-Hinds Co., Syracuse, N. Y.
Curtis Lighting Co., Chicago, Ill.
General Electric Co., Schenectady, N.Y.
Edwin F. Guth Co., St. Louis, Mo.
Kliegl Bros. Universal Elec. Stage Lighting Co. Inc., New York, N.Y.
Major Equipment Co., Chicago, Ill.
Miller Company, Meriden, Conn.
S & M Lamp Co., Los Angeles, Calif.
Thomas A. Edison, Incorporated, West Orange, N. J.
Westinghouse Electric & Manufacturing Co., Cleveland, Ohio

We do not manufacture reflectors. The companies listed above, licensed under Aluminum Company of America patents, are well able to take care of your requirements.

ALCOA ALUMINUM

High reflectivity of Alzak Aluminum Reflectors, in combination with the designs which their manufacturers recommend, gives maximum efficiency to your lighting system. Long life and ease of maintenance make annual costs low.

High reflectivity is obtained by a special electrolytic treatment of polished Aluminum sheet. This surface is protected by a smooth, oxide coating of glass-like hardness, to which dirt does not cling. It won't chip, doesn't scratch easily and can be readily cleaned by washing with soap and water.

Alzak Reflectors cover a series of finishes. Some are intended for indoor use. Others are able to withstand out-of-door exposure and the corrosive conditions encountered in certain industrial processes. You can have bright, specular finishes or matte, diffuse surfaces.

Whatever your use, *specify the right Alzak finish.* Write to any of the companies listed for further information or address your letter to us.

® REG. T. M., ALUMINUM COMPANY OF AMERICA

ALUMINUM COMPANY OF AMERICA
1945 GULF BUILDING • PITTSBURGH, PA.

the proper departments, which iron out misunderstandings and report back to the information desk.

In Dallas the bureau answers inquiries at the rate of one every four minutes. On the bureau staff are a director, who is also in charge of traffic education and radio programs on municipal government, a secretary, and a National Youth Administration employee. When a complaint is made by telephone, letter or in person, it is recorded in triplicate. The original is retained by the bureau, and two copies are sent to the department concerned, which returns one of them when the complaint has been disposed of. A form postcard is sent as a follow-up to the complainant after the department notifies the bureau how the complaint has been handled.

Milk Distribution as a Public Utility

"LEGAL Possibilities and Limitations of Milk Distribution as a Public Utility" are discussed in a two-part article under that title in the *Journal of Land and Public Utility Economics* for November, 1939, and February, 1940. The author is W. P. Mortenson, Associate Professor of Agricultural Economics, University of Wisconsin. The discussion concludes with the following summary:

So far the United States Supreme Court has not ruled upon the legality of a type of control in the milk business involving the exclusive franchise feature, although such rulings have been made in the accepted public utility fields. Court decisions to which one must look for precedents are not such as will provide a dependable indication of what position the Supreme Court may take on the question of the exclusive franchise feature of control of milk distribution. Nevertheless, there would seem to be sufficient legal support for the position that the legislatures have power either to grant exclusive franchise to a private corporation to process and distribute milk, or to delegate to the city or municipality the power to perform the function itself through municipal ownership. The outcome of the decision will depend largely upon the particular case brought before the Court and upon the philosophy of the majority of the Supreme Court members at the time the case appears for decision. In the final analysis it will doubtless turn mainly upon the question of whether costs of the inherent competitive wastes are serious enough so that, in the opinion of the Court, the public welfare of the people in a city will be improved through control and unification of the milk distribution system. If the Court favors a philosophy of increased social control in the interest of public welfare, it can with consistency reach a decision supporting a legislative act imposing control similar to that now in force over the more typical public utilities.

Finally, the degree of success of public utility operation and regulation will be dependent in no small measure upon political considerations. Even though it can be shown that such savings could be brought about, this is not proof of the fact that they would be carried out if public utility control operating as a unified system of milk distribution were put into effect. If it were certain that those responsible for the management of a city—or state—were thoroughly qualified to direct a business such as milk distribution and that they could also be depended upon to operate it strictly in the public interest with no personal or political considerations, then it would be relatively easy to predict the extent of savings which *would* actually be brought about. But can we always be confident that such conditions will be carried out? Only experience can give answer to this question.

"Value" in Real Estate Assessments

Two Comments on the Discussion by President William Stanley Miller of the New York City Tax Commission (See THE AMERICAN CITY *for March, 1940)*

To the Editor of THE AMERICAN CITY:

The analysis by President Miller of the New York Tax Commission, in your April issue, of "Full Value versus Market Value in Real Estate Assessments," is a very interesting discussion of a highly controversial subject. Since both taxpayers and public officials are now very tax-conscious, I think that more articles of this nature should appear in THE AMERICAN CITY. Certainly the property owners' side should be given more consideration.

As appraisers of the real estate of entire municipalities, we try to be as impartial as possible in the determination of values for local assessment purposes. We take the stand that we are arbiters between the property owner and taxing authorities and hew as closely as possible to an equalization line, taking into consideration all relevant factors of value.

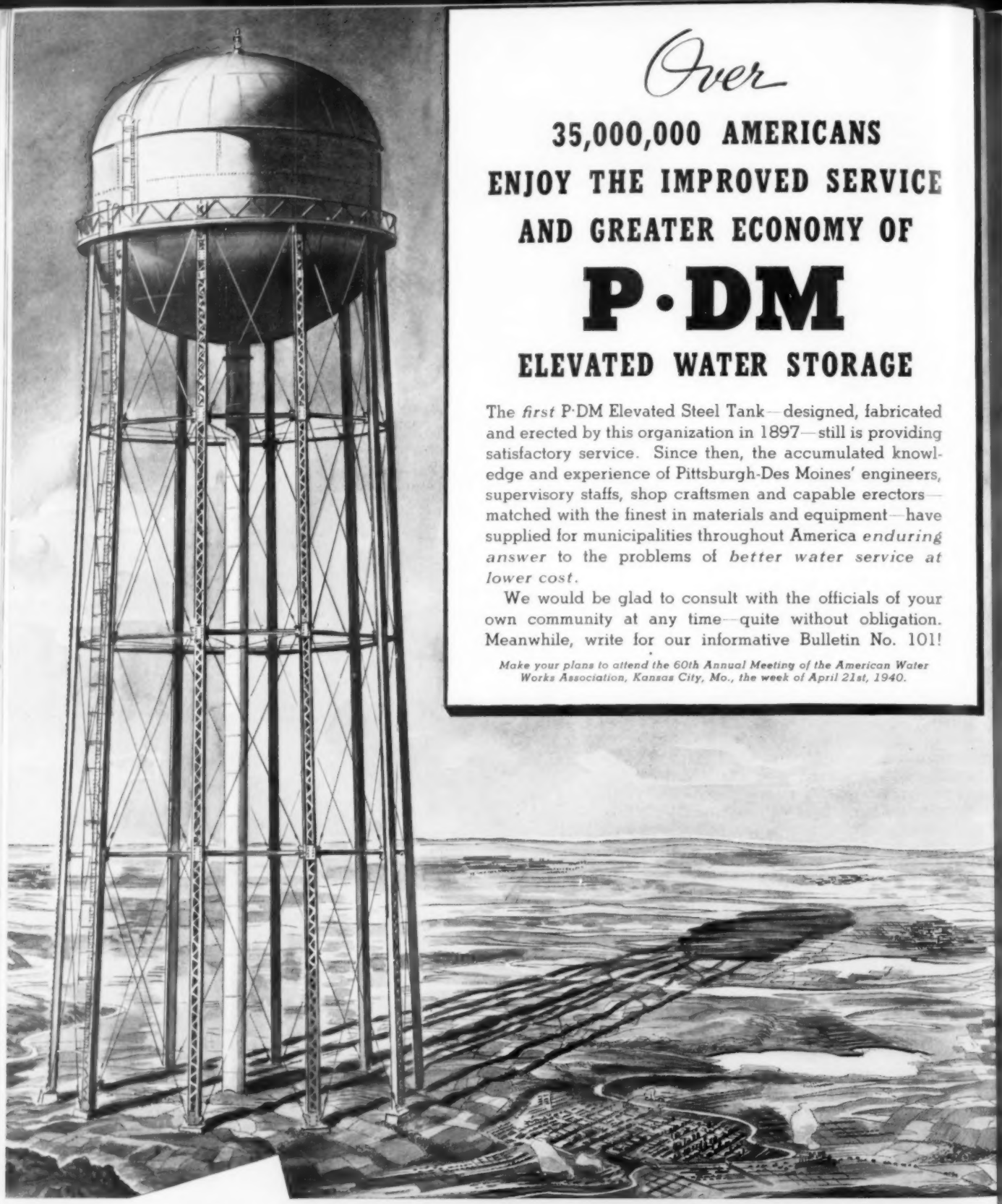
Since land values must be separated from buildings, we consider location, recent sales, asking prices and earnings, trend, zoning, present occupancy and uses to which the property may be put. The value of a building is what its presence adds to the value of the land upon which it stands; therefore, all factors of consideration applying to land must likewise be applied to structures. In addition, we must consider age, physical condition, obsolescence, inadequacy and architecture. However, equality is the prime thing in ad valorem taxation, and anything that ignores the rights of taxpayers as a whole is to be condemned.

Our courts are part of our taxation machinery, and while a tax-assessing body may disagree with the courts and even have the right to ignore a court decision, I firmly believe that such decisions should be respected until at least the next general revalution, when a further adjustment up or down may be justified.

Legislators are beginning to recognize the inadequacy of legal definitions of value for taxation; i.e., "true value in money," "fair market value," etc. Witness what has been incorporated in the tax law of the state of Pennsylvania:

"In arriving at such value, the price at which any property may actually have been sold shall be considered but shall not be controlling. Instead, such selling price, estimated or actual, shall be subject to revision by increase or decrease to accomplish equalization with other similar property within the taxing district."

Fair market value of properties capable of commanding competition between buyers, such as dwellings and commercial properties, is the best criterion of value the assessor can use as a basis for assessment; in cases of special-purpose properties it should be only a factor. A hard-and-fast adherence to market price as a basis for assessment has a very deleterious effect upon equalization. A case in point is a writ of certiorari brought against a hotel property in a city recently revalued by us as fairly, equitably and disinterestedly as humanly possible. This hotel has a depreciated and book value of $150,000, an appraised full value of $120,000, an equalized assessed value of $100,000, yet was sold for $60,000. The only evidence of value offered in court by the new owner was the sale price. Since no protests have been filed by the hotel owners or property owners in that vicinity, it is obvious that if the Court allows a reduction it will be unfair to the city and all other property owners. This case has not yet been decided,



Over

35,000,000 AMERICANS ENJOY THE IMPROVED SERVICE AND GREATER ECONOMY OF

P·DM

ELEVATED WATER STORAGE

The *first* P·DM Elevated Steel Tank—designed, fabricated and erected by this organization in 1897—still is providing satisfactory service. Since then, the accumulated knowledge and experience of Pittsburgh-Des Moines' engineers, supervisory staffs, shop craftsmen and capable erectors—matched with the finest in materials and equipment—have supplied for municipalities throughout America *enduring answer* to the problems of *better water service at lower cost.*

We would be glad to consult with the officials of your own community at any time—quite without obligation. Meanwhile, write for our informative Bulletin No. 101!

Make your plans to attend the 60th Annual Meeting of the American Water Works Association, Kansas City, Mo., the week of April 21st, 1940.

P·DM

ALWAYS ON THE JOB

PITTSBURGH·DES MOINES STEEL COMPANY

PITTSBURGH, PA. 3412 NEVILLE ISLAND . . . DES MOINES, IA. 913 TUTTLE STREET

NEW YORK, ROOM 915, 270 BROADWAY . . . CHICAGO, 1216 FIRST NATIONAL BANK BUILDING

DALLAS, 1217 PRAETORIAN BUILDING . . . SAN FRANCISCO, 619 RIALTO BUILDING

but whatever the outcome, if the assessor takes exception he should appeal the decision rather than restore the contested value to the tax roll.

Damage allowances for properties taken under power of eminent domain is hardly fair as a basis for ad valorem taxation, since such compensation generally recognizes elements of value that would not normally be considered by the tax assessor. These elements are good-will developed by reason of a long-established place of business, cost of removal, cost of legal and other professional services, loss of business, etc. It is therefore manifestly unfair to assess property at what a court might allow in condemnation proceedings unless these special allowances are deducted from the total award.

J. M. CLEMINSHAW.
Cleveland, Ohio, March 20, 1940.

The Difficult Art of Property Appraising

To the Editor of THE AMERICAN CITY:

I have just read with great interest the article "Full Value versus Market Value in Real Estate Assessments" in the March issue of your magazine, and agree fully with President William Stanley Miller of the New York Tax Commission that the practice of juggling real estate values to serve particular purposes is much too prevalent. This practice is especially noticeable in appraisals for taxation and for condemnation purposes. I have seen the same property valued three and four times as high in a condemnation proceeding as when appraised for securing a tax reduction.

To prescribe "legal yardsticks by which to measure assessed valuations" has failed. We cannot establish economic principles by statute. In the first place, it is obvious that land because of its unique character (no two parcels being exactly alike) cannot have "market value" (price) in the sense, for example, that this term is applied to commodities and securities. The market prices of bread, automobiles or listed stocks, for example, need neither court interpretation nor appraising.

There appears to be considerable confusion among the learned on this point. Prof. Simeon E. Leland of Chicago says:

"Economists have grown weary pointing out that nothing has intrinsic value; that the worth of a good is its value in exchange, meaning merely the price it will fetch in a market." (See page 320, 1937 Report of the National Tax Association.)

"That value for taxation means *market value* . . . the price at which the item sells for *on assessment day*." (Page 331 of the 1933 Proceedings of the National Tax Association.)

Professor Bonbright of Columbia, on the other hand, maintains that:

"The law should abandon in words, as it has generally abandoned in fact, that *market value* constitutes the proper basis of tax assessments," and that the term "market value" as generally employed in connection with assessments is a "meaningless and delusive term" because the "market value standard is inapplicable to unique types of property." (See Bonbright's "Valuation of Property," page 509, chapter 17).

Most economists outside of the single-tax group hold that land is a *capital* (producer's) good, and that:

"The value of any capital good is dependent upon the income it produces. The value of *any* item is the discounted value of its services." (Dr. Irving Fisher, Yale, in July 1937, issue of the *Tax Magazine*.)

In other words, except for small standard homes, or in the very few cases where rents have been definitely stabilized, can there be such a thing as market value of land in the general understanding of that term? Twenty different definitions of market value of land in the statutes of as many states show the futile groping after something which does not exist. "Full value" is given as one such definition of market value.

Practically all our court and statutory definitions of the so-called market value of land will be found to define *use* or *utility* value. "The value of land," John Stuart Mill said, "is the present worth of future expectations." That is, it is the present worth of all benefits which we estimate will accrue from a property over the years, such flow of benefits (income) being translated into static wealth (value) through the capitalization process.

As for court decisions, one can find almost anything he desires. We would have avoided many pitfalls if we had heeded one such decision given many years ago by the United States Supreme Court (*CCC and St. Louis v. Victor M. Backus*), an excerpt from which is:

"The value of the property results from the use to which it is put, and varies with the profitableness of that use, present and prospective, actual and anticipated. There is no pecuniary value outside of that which results from such use. The amount and profitable character of such use determines the value. . . ."

Fair market value is something quite different. It is clearly defined as a value which a purchaser would be justified in paying for a property. However, no one is justified in buying a property unless its future utility, so far as it can be estimated, warrants the price paid for it.

Much can be said about the statement in President Miller's article: "There must necessarily be a stable revenue to be derived from real property in order to meet the bills of the municipality." One of the methods used to force an artificial stability is to regard *cost* of constructing the improvements and of acquiring the land as also representing the property's *value*. Cost, of course, is an historic fact and remains the same although the property may become entirely valueless. It costs just the same to drill a dry oil well of the same depth as one which produces a thousand barrels a day. Many assessors and others have apparently yet to learn that cost and value are two quite different things.

Proper appraising of real property is an exceedingly difficult art requiring the highest skill and technical training. Sooner or later the process of determining land valuations must be taken out of the courts and placed with qualified valuation boards or committees. Engineers, physicians and other members of the skilled professions do not submit their technical problems to courts for adjudication. The recently published "Assessment Principles" by the National Association of Assessing Officers, stresses the necessity of appointing to the assessors' office skilled evaluators instead of, as now, electing men whose chief qualification is often mere vote-getting ability.

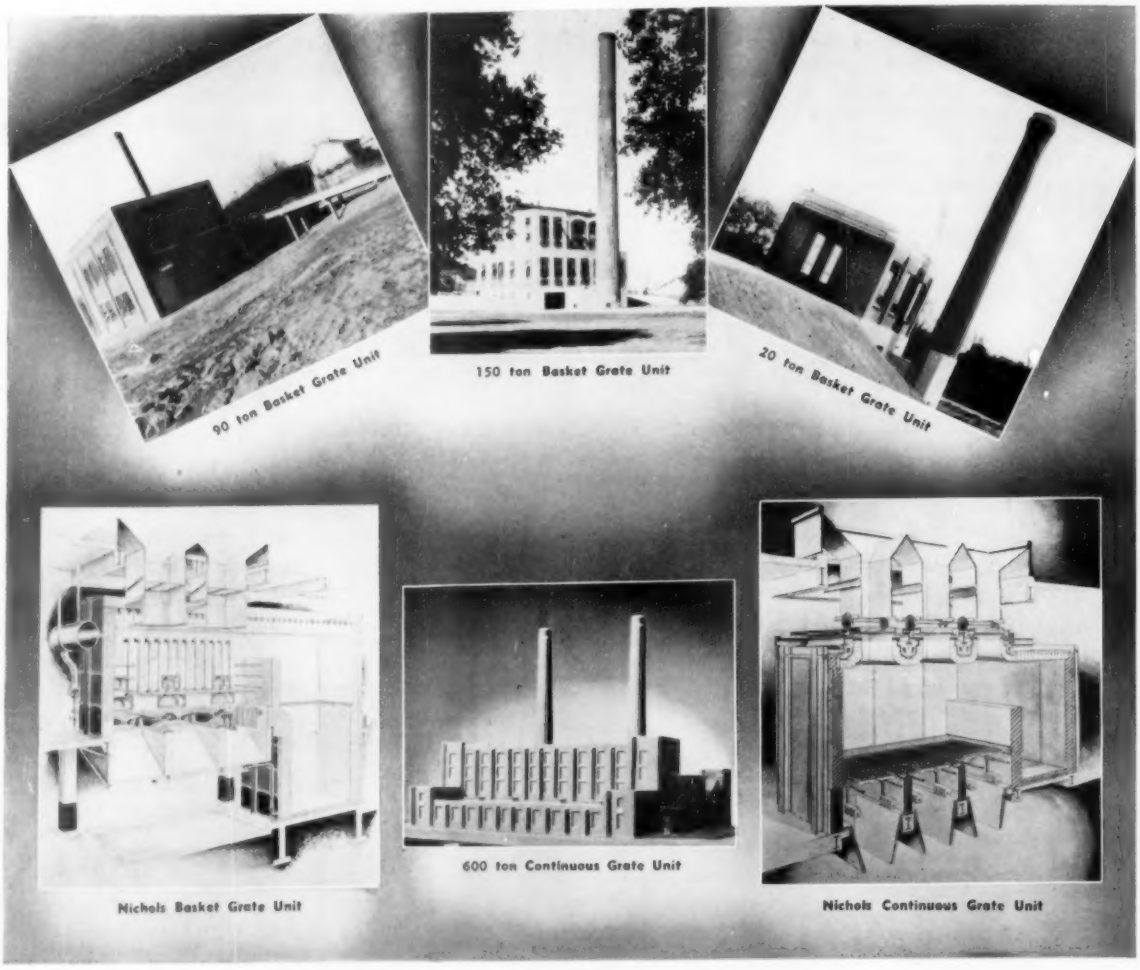
Still further steps should be taken to eliminate "ambulance chasing" curbstone appraisers, by prescribing the same rigid qualifications for real estate appraisers as govern the qualifications of engineers, doctors and other members of skilled professions. A definite step in this direction has been taken by the formation of the American Institute of Real Estate Appraisers. However, owners will seldom employ these skilled evaluators because the latter insist that the appraisals for condemnations should be the same as the appraisals for tax-reduction purposes.

Until the real estate appraisal field is purged of incompetent and unscrupulous appraisers, it is far better that we continue to trust our cases to courts which, though not trained for this task, have under the circumstances "done their share of the job remarkably and abstemiously well" (Bonbright).

Although hampered by antiquated laws, lack of funds, and by racketeering "tax reducers" who masquerade under names giving the appearance of municipal or cooperative property owners associations, many assessors are nevertheless doing remarkably good work, and deserve the highest commendation.

Extensive public education in regard to taxation and public finance in general has become an essential prerequisite to a more equitable and sound local tax system.

IVAN A. THORSON.
Los Angeles, Calif., March 18, 1940.


90 ton Basket Grate Unit
150 ton Basket Grate Unit
20 ton Basket Grate Unit
Nichols Basket Grate Unit
600 ton Continuous Grate Unit
Nichols Continuous Grate Unit

Nichols Refuse Incineration Plants Have Capacities of 20 to 600 Tons Daily

They provide communities with a safe, sanitary, easy and economical method of disposing of municipal garbage and rubbish without objectionable smoke or odors.

The fact that the Nichols design is flexible including either basket grate or continuous grate types assures an installation suitable to overcome local geographical, economic or seasonal conditions.

On problems involving the disposal of any kind of municipal solid wastes — including garbage, rubbish and the sludges of sewage and water treatment plants — communicate with "Incineration Headquarters".

NICHOLS

ENGINEERING & NERCO RESEARCH CORP.

60 WALL TOWER NEW YORK, N. Y.

Prepared by
FRANK B. WILLIAMS
Author of "The Law of City Planning and Zoning"

Zoning and Planning Notes

With the cooperation of
EDWARD M. BASSETT
Author of "Zoning" and of "The Master Plan"

Residential District—Industrial District

CALIFORNIA.—*Skalko v. City of Sunnyvale*,* 95 Pac. 2d, 93 (Supreme Court, August, 1939).—This was an action for a declaratory judgment that the zoning ordinance restricting plaintiff's property to residential use was void as to the plaintiff. The property was on the border line between a residential and an industrial zone. In the industrial zone and about 100 feet from plaintiff's property the largest cannery in the world had been erected, employing 3,000 workers. In addition to the activities necessarily incident to this large industrial plant, there were a warehouse and piles of empty boxes at one side of the plaintiff's property, the boxes being taken to and from these piles at all hours of the day and night. The heavy truck traffic incident to the operations of the cannery, continuous day and night switching of freight cars on tracks 450 feet from plaintiff's property, and the movement and parking of the workers' automobiles, were some of the developments which destroyed the usability of plaintiff's property for residence purposes. Plaintiff desired to erect and operate a cafeteria and refreshment stand. The Court decided in the plaintiff's favor. Obviously the time had arrived for a change in the zoning.

This is a reversal by the Supreme Court of California of a case of the same caption reported in the *News Letter* of December, 1939. The facts stated in the two reports are, however, not the same; that is, the lower court, so far as appears in the report, decided on the basis of facts different from those recited by the highest court when reversing the lower court.

* From *News Letter*, American Society of Planning Officials.

Spot Zoning

CALIFORNIA.—*Spinelli v. County of San Diego*,† Superior Court for San Diego County, January, 1940. Not reported.—The opinion of the Court is oral and informal and does not contain any statement of the facts. The facts stated in this note were obtained elsewhere.

The property in question was a small lot (.7-acre), lying between a busy state highway, a county highway, active railroad tracks and a high bluff. It had been formerly a part of an 8-acre tract, and in the zoning which was made in connection with the relocation of the state highway (a relocation which left this .7-acre between the state highway and the railroad) the then owner had requested that this small piece of property be left in the same district as the 7.3 acres on the other side of the relocated state highway. The district where the property in question is, as well as adjoining properties along the state highway and the 7.3 acres across the highway, was limited to agricultural and residential purposes and required one acre per residence.

The small piece in question was sold to the plaintiff, Spinelli, who applied for a zoning amendment which would permit him to erect a gasoline station. The application was rejected by the Planning Commission and the county governing body, and Spinelli filed an action for a declaratory judgment. The Court decided against him.

The Court stated that the general welfare and protection against spotty business development along the highway is sufficient reason for the zoning even where there is some hardship on an individual property. The ruling is clearly in favor of compact, as distinguished from spotty, business uses along major highways.

† From *News Letter*, American Society of Planning Officials.

Cemetery

GEORGIA.—*Grubbs v. Wooten*, 3 S. E. 2d, 874 (Supreme Court, November 14, 1939.)—The proprietors of a vacant city lot, located in an "exclusively modern and distinctly residential" section of the city of Atlanta, erected a building to be used as an office, and conducted the business of displaying for sale on the lot tombstones and monuments designed and intended to be erected over the graves of bodies of deceased persons. The display resembled a graveyard. No zoning ordinance was involved.

Held by the Court that no nuisance was committed. There seem to be no decisions holding that a cemetery, unattended by injurious or offensive drainage or fumes, is a nuisance; and therefore the lot with its "graveyard appearance" is not a nuisance, but a legitimate business.

Zoning Ordinance—Minimum Height—Value Requirements

NEW JERSEY.—*Brookdale Homes, Inc. v. Johnson, Town Clerk of Town of Bloomfield* (Supreme Court, January 15, 1940).—The zoning ordinance provides that no building shall be erected . . . with its roof ridge less than 26 feet above the building foundation. *Held* that the provision does not tend to promote the public health, the public morals, the public safety, or the public welfare and is invalid, as a capricious and arbitrary attempt to deprive an owner of the legitimate use of his property. The town's Fire Chief, Chief of Police, Health Officer and Building Inspector all testified that a house built 26 feet above the foundation did not promote public health, safety, or general welfare more than a house built only 21 feet above the foundation.

The Brookdale Company contends that the ordinance is justified by the fact that a building less than 26 feet in height causes depreciation in the value of surrounding property, when that surrounding property is at least 26 feet in height; and that therefore the ordinance is a proper exercise of the police power under the zoning enabling act, which provides that "such [zoning] regulations shall be made with a view of conserving the value of property and encouraging the most appropriate use of land throughout such municipality." It may be doubted whether a house less than 26 feet in height does necessarily depreciate neighboring values; but, be this as it may, the provision is invalid. For if the company's theory were sound, a municipality under cloak of its zoning power, might provide that no house costing less than a certain sum should be erected in a specified area. This cannot be done; for such a provision cannot be said to be made "with a view of conserving the value of property and encouraging the most appropriate use of land throughout such municipality." No person under the zoning power can legally be deprived of his right to build a house on his land merely because the cost of that house is less than the cost of his neighbor's house.

THOMAS ADAMS—*Farsighted Planner*

THE AMERICAN CITY records with profound sorrow the death on March 14, in Sussex, England, of Thomas Adams, international authority on town planning and housing, and one of the earliest and most frequent contributors to the columns of this magazine. A quarter-century ago Mr. Adams advocated ideas whose farsightedness and importance are now belatedly coming to be recognized. Witness these concluding sentences from an article by him in THE AMERICAN CITY for March, 1915:

"We must accept the fact that the responsibility for planning our cities, for improving housing conditions and removing the slums rests with the governing authorities and the business men of our cities. We have to pay for past neglect even if in doing so we have to sacrifice some of our theories regarding individual liberty and what we call the functions of government."

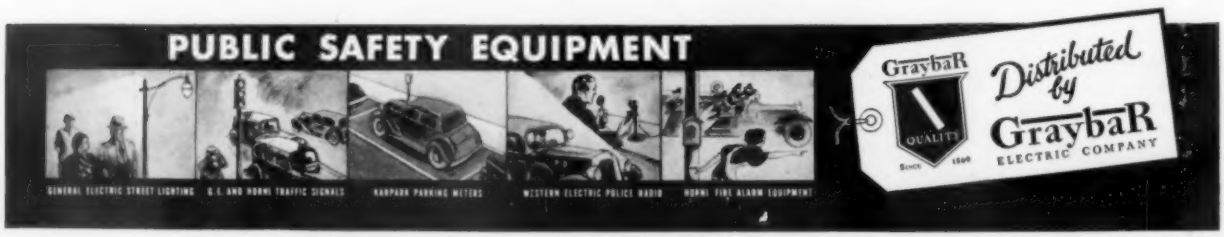
CLOSE THE WALL *Completely*

...with *Western Electric* 2-Way Police Radio

Cooperative action between Police Headquarters and officers on car patrol is often the key to crime detection or crime prevention. In many situations, one-way communication leaves a gap in the wall of police protection.

Block this last opening securely at reasonable expense with Western Electric 2-way police radio. A telephone handset puts the car that's "in action" in complete contact with headquarters. A simple "press-to-talk" switch is the only operating control.

The compact, self-contained car transmitter and receiver units are easily installed. Dependability is high; maintenance cost low. Both units operate without excessive drain from any 6-volt car battery system. The same antenna serves for sending or receiving. » » » The system operates in the ultra high frequency band (30-40 megacycles)—the headquarters transmitter delivering from 5-500 watts of carrier power to the antenna, depending on your selection of transmitter. Carrier frequency stability of .02% or better is assured by use of a quartz crystal. In operation under difficult conditions these units have further disproved the idea that frequencies above 30 megacycles are limited to line-of-sight range. Areas overshadowed by tall buildings, hilly terrain, etc. are generally covered successfully. » » » For further information on police radio systems or other communication and signaling equipment, call your local GRAYBAR office or write for bulletins. Graybar Electric Company, Graybar Building, New York, N. Y.



Municipal Law Notes and Decisions

Prepared by National Institute of Municipal Law Officers, Washington, D. C.
John A. McIntire and Charles S. Rhyne, Legal Counsel

Extraterritorial Operation of Local Food Regulatory Ordinances

The decision on February 21, 1940, in the case *of Ex parte Ernest*, 136 S. W. (2d) 595, brings to the fore the practical problem of the extraterritorial operation of a city's power to impose license regulations on the sale of foodstuffs within the city. In other words, may a city, in the exercise of police power, in the interest of the public health, safety, and morals of the inhabitants, adopt regulations which have an effect on plants, dairies, meat packing-houses, bakeries, etc., outside the city limits but which prepare food products for sale within the city?

The facts presented by the principal case called for decision of whether or not the police power of the city of Winters, Texas, operated upon a bakery outside the city limits, which supplied bakeries inside the city limits and the products of which were sold to the inhabitants of the city. The city had an ordinance regulating the manufacture and distribution of bread, under which the city health officer was authorized to inspect the bakeries, and under which operators of such bakeries had to pay an inspection fee. It was held by the Court that this ordinance was void as an attempt to exercise extraterritorial jurisdiction without legislative authority.

The police power of a municipality extends to the licensing, regulation and control of the sale of food within the city under the "health" clause of the grant of police power. This power includes inspection and regulation of plants, dairies, bakeries, meat companies, etc., within the city limits and is limited as to exercise within the city only by the usual requirement of reasonableness. *Dorsa* v. *Santa Clara County*, 72 P. (2d) 912 (Cal. 1937).

Where the manufacture and sale of food products takes place entirely within a city, the above principle is sufficient to sustain the necessary protective measures of the municipality. Where, however, the manufacture or processing takes place outside the city, and the sale and consumption within, the need for regulation in the interests of local health is the same, but the question of the legal power of the city to effectively control the subject matter is in conflict. It is axiomatic that in the absence of a delegation of such specific power no municipality may exert its powers beyond its territorial limits. On the other hand, almost every exercise of local power is bound to have some incidental effect on persons or things temporarily or permanently outside the city limits.

It would seem that the rational solution of the problem would call for a recognition of valid exercise of the local regulatory power if the extraterritorial effect thereof is in fact reasonably incidental and the ordinance does not by fact or intention discriminate against non-residents. See *City of Norfolk* v. *Flynn*, 101 Va. 473, 44 S. E. 717 (1903). Some cases, however, seem to take a rigid view that any exercise of power which has any extraterritorial operation is bad. See *Ex parte Ernest*, supra; accord: *City of Rockford* v. *Hey*, 9 N. E. (2d) 317 (Ill. 1937); *Grant* v. *Leavell*, 259 Ky. 267, 82 S. W. (2d) 283 (1935); *Miller* v. *Williams*, 12 F. Supp. 236 (Md. 1935); *State* v. *Minneapolis*, 190 Minn. 138, 251 N. W. 121 (1933).

In accord with the *City of Norfolk* v. *Flynn* case, *supra*, see *La Franchi* v. *City of Santa Rosa*, 52 P. (2d) 558 (Calif. 1935); *Wright* v. *Richmond Co.*, 186 S. E. 815 (Ga. 1936); *Am. Baking Co.* v. *City of Wilmington*, 19 N. E. (2d) 172 (Ill. 1938); *State ex rel. Hogan* v. *Spencer*, 190 So. 506 (Fla. 1939); *In Lang's Creamery, Inc.* v. *City of Niagara Falls*, 231 N. Y. S. 368 (1928); *Witt* v. *Klimm*, 274 P. 1039 (Calif. 1929); *Gilchrist Drug Co.* v. *City of Birmingham*, 174 So. 609 (Ala. 1937); *McKenna* v. *City of Galveston*, 113 S. W. (2d) 606 (Tex. 1938).

The following situations illustrate the problem:

In *McKenna* v. *City of Galveston, supra*, suit was brought to enjoin enforcement of a city ordinance prohibiting the sale in the city of ice cream not pasteurized and frozen on the same premises in the city. The plaintiff had been manufacturing and selling ice cream made from ice cream and ice cream mix manufactured in the neighboring city of Houston, where it was pasteurized and shipped to him by refrigerated truck. He claimed the ordinance was not a safeguard to the health of the city's inhabitants but was a discriminatory action to protect ice cream dealers, pasteurizing their products within the city, from competition outside the city, and he also claimed it violated his constitutional rights. The Court held, however, that this ordinance was not invalid as arbitrary or unreasonable and created no discrimination or monopoly. The reason for the decision was based chiefly on the testimony of various bacteriological experts who testified that the more steps in handling substances between pasteurization and reaching the consumer, the more danger to the health of the inhabitants of the city. A very similar case in which similar contentions made by the plaintiff were also overruled is *Gilchrist Drug Co.* v. *City of Birmingham, supra*.

In *Witt* v. *Klimm, supra*, an ordinance of San Francisco requiring that all milk sold within the city should be pasteurized within the city, was enforced against the operation of a plant which was less than two miles from the city limit and which was under the inspection of a service approved by the Director of Agriculture of the state. This case seems extreme on the point, but it clearly shows the extent to which the police power is allowed to operate incidentally in the public interest. In *Lang's Creamery, Inc.* v. *City of Niagara Falls, supra*, again a similar ordinance was upheld by the Supreme Court of New York. There a party wished to sell milk in Niagara Falls which had been pasteurized in his plant at Buffalo, and an ordinance requiring that all pasteurized milk sold within the city be pasteurized in plants in the city was upheld.

In another case the defendant operated a meat market within one mile of the city limits of Ocala, Fla. His market was operated without the inspection stamp of the city meat inspector or the one required by Federal law governing interstate shipments. In *State ex rel. Hogan* v. *Spencer, supra*, the ordinance requiring an inspection stamp was held not invalid as discriminatory, since the purpose of the ordinance of the city was to prevent sale of impure food in the affected territory.

In the case of *American Baking Co.* v. *City of Wilmington, supra*, the validity of an ordinance of the city of Wilmington which required a license fee from vehicles used to deliver foodstuffs was challenged. Plaintiff's trucks were licensed and inspected in Joliet, Ill., and were certified to by the state of Illinois and the Federal Government authorities as to sanitary conditions. They claim Wilmington's ordinance is for revenue only, discriminatory, and confiscatory. The Court holds that, while it is true that a city has no power to require a non-resident to pay a license fee for use of a motor vehicle, yet the police power of the city as far as matters concerning the public health are concerned, is controlling. The ordinance was held to be a valid exercise of the municipality's power.

In the case of *City of Rockford* v. *Hey, supra*, on the other hand, the Court held that an ordinance prohibiting operation of an ice cream factory and the sale of ice cream products in the city unless a license fee was paid and the plants inspected by city inspectors so far as they purported to extend to factories in other cities, was invalid as not within the powers delegated to the city by statute; and as these provisions were inseparably connected with other provisions, the entire enactment was rendered void. The plaintiffs had been fined $100 for selling in Rockford products manufactured in Dixon. They had a license from the state, and their plant was regularly inspected by state officials. The Court decided that in view of the fact that the ordinance would require ice cream factories located in other cities to meet the sanitary requirements of Rockford to entitle them to Rockford licenses on payment of the annual fee, its operation was too far removed from the police power granted to the municipality.

Administrative Law—Procedure—Delegation

A regulatory ordinance enacted pursuant to a statute was held constitutional even though it did not provide limits within which the discretion of the council was to operate, as an appeal was provided to a Board of Administration from the decisions of the administrative officers. Thus the absence of a rule of action did not affect the constitutionality of the ordinance. *City of Miami Beach* v. *State*, 193 So. 543 (Fla. Jan. 16, 1940).

Federal-City Relations—Tort Liability for Federal Project

Where a municipality owns and controls real estate and creates a private nuisance to real property of another outside the limits of public work, the fact that a Federal agency is involved in the construction work does not relieve the municipality of liability for damages. An ice crop was damaged by dirt from the breaking of a dam on an artificial pond maintained by defendant city and under construction by a Federal agency. *Towner* v. *City of Melrose*, 25 N. E. (2d) 336 (Mass. Feb. 2 1940).

Housing—Maryland Act

Although the Maryland Housing Act passed pursuant to the program of the USHA does not require elimination of slums equal to new construction by its own terms, the Maryland Court of Appeals holds that the plaintiff taxpayer on demurrer is entitled to a ruling permitting him to be heard on the facts alleging that the purpose of the Housing Authority of Baltimore City is to construct dwellings not needed to house slum dwellers. The Court holds that the whole purpose of the Act and the construction necessary to its validity is that it is to be applied defensively to remove the threat to the health and safety of the community of substandard homes. *Matthaei* v. *Housing Authority of Baltimore*, 9 A. (2d) 825 (Md., Dec. 21, 1939).

Torts—Notice of Claim

The purpose of requirement of filing a notice of claim against a city is to give the city an opportunity to pay or adjust the claim without the unnecessary expense of litigation if it deems the claim valid, and such notices should not be narrowly construed if they perform this function. *Trustees of University Coop. Co.* v. *City of Madison*, 288 N. W. 742 (Wisc., 1939). See also "Torts—Notice of Claim Statutes," in December, 1939, issue, The American City, page 109.

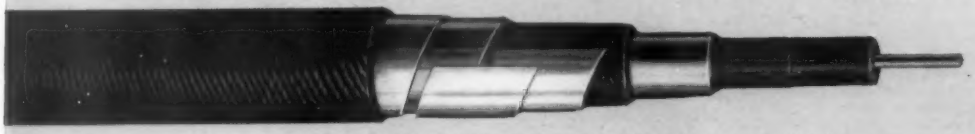
WPA—Injury to Worker

Works Progress Administration worker injured by failure of city to keep passageway in safe condition from sewing room to drinking-water facilities in building city had leased, could recover damages, as city was engaged in a "proprietary" function. Verdict of $25,000 held not excessive. *Duren* v. *City of Binghamton*, 15 N. Y. Supp. (2d) 518 (July 13, 1939, Sup. Ct., N. Y., Broome County).

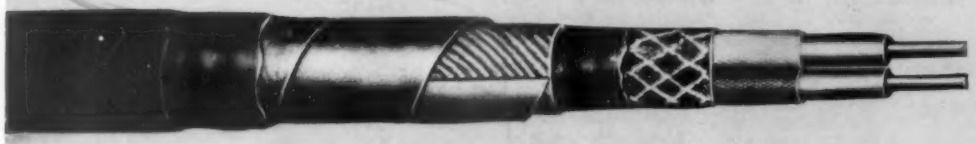
3 HAZARD UNDERGROUND CABLES

FOR DIRECT BURIAL

HAZARD PARKWAY CABLE. A lead sheath protects the insulated conductor from moisture, and the two flat steel tapes afford mechanical protection. Sometimes made with a single "S" shaped interlocked steel tape armor (Hazard Loxsteel). » » » Thousands of miles of this Armored Parkway Cable are in constant use, installed during the past twenty years and more.

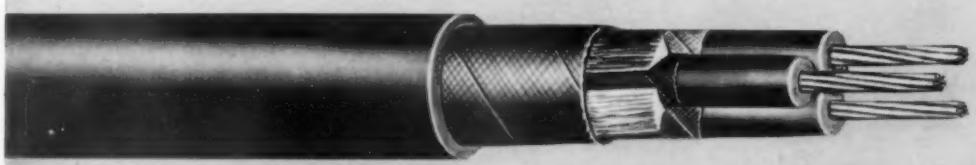


HAZARD ARMORTITE CABLE. A *non-metallic* armored underground cable, originally designed for 20 ampere series street lighting circuits to overcome the magnetic effect of steel tapes in lead and steel armored cables. It is lighter in weight and less costly. » » » Armortite is a cable for street, airport and athletic field lighting, for power circuits between buildings, and for underground entrance circuits. It is ideal for marshy locations where steel armor would quickly corrode. » » » Hazard Submarine Rubber Insulation, and the effective protective coverings make Armortite the outstanding underground cable.



HAZASHEATH CABLE. A comparatively recent type of *non-metallic* armored underground cable for burial in the soil without ducts. Hazard Submarine Rubber Insulation, with a simple armor of 60% *tough* rubber, vulcanized in metal molds, is exceedingly dense, strong, moisture resistant and long aging. Its simplicity of construction cuts cost of installation, splicing, and connecting.

Its size, weight and cost are approximately the same as Armortite Cable.



HAZARD INSULATED WIRE WORKS

DIVISION OF THE OKONITE CO.

WORKS: WILKES-BARRE, PENNSYLVANIA

New York Chicago Philadelphia Atlanta Pittsburgh Buffalo Boston Detroit Seattle
Dallas Washington Cleveland San Francisco St. Louis Los Angeles

Municipal and Civic Publications

Please mention THE AMERICAN CITY when ordering

City Swimming Programs

Bibliography of Swimming.—Compiled by Frances A. Greenwood, Department of Physical Education, University of Alabama. The H. W. Wilson Co., New York. 1940. 308 *pp.* $4.25 *from* THE AMERICAN CITY.

This is a thorough, detailed bibliography of references on the subject of swimming and related subjects, listed in one alphabetical index, by titles—10,000 of them—and by authors, under 608 subjects. It is extensively cross-referenced; main subjects are elaborately subdivided; the whole arrangement makes for quick, sure reference-finding. Municipal officials will find extended references on such subjects as city swimming programs, public health in reference to pools and swimming, construction and operation of pools. Appendices also contain lists of films on the subject, of organizations promoting swimming, and of sources for equipment and supplies.

Traffic

1939 *Proceedings of the Tenth Annual Meeting of the Institute of Traffic Engineers. Apply to the Secretary of the Institute,* 60 *John St., New York.* 1940. 91 *pp.*

Among the papers on traffic contained in the Proceedings, the section on "Treatment in Problem Locations in City Streets" will be of particular interest to readers of THE AMERICAN CITY. Problems in business districts and on narrow and wide residential streets, one-way street systems for relieving congestion, problems of night driving and parking facilities in business districts, are subjects of talks.

Transportation and Utility Legislation

Recent State Laws on Transportation and Public Utilities.—State Law Index, Library of Congress. Apply to U. S. Government Printing Office, Washington, D. C. 1940. 83 *pp.* 15c.

Administration, operating privileges, operation, and public ownership and cooperative movements are the four main headings in this publication, under which are digested the important statutory changes and new laws enacted in this country from 1935 to 1938, in the field of transportation and public utilities.

Airport Legislation

Airport Approach Protection Materials.—National Institute of Municipal Law Officers, 730 Jackson Place, Washington, D. C. 1940. 29 *pp.* $1.00.

Because hazards to airport approaches may render airports useless, and money invested in them a loss, it is important that cities set up the legal machinery necessary to protect airport approaches, before rather than after structures are built which will interfere with airport operation. This publication contains the proposed statute of the state of Kentucky, and the proposed ordinance for the city of Louisville, covering airport approach protection. Also included is a copy of the decision in the Hinman case, which offers the legal basis for airport approach protection regulations under the police power.

Fire Hazards

Building Codes—Their Scope and Aims.—National Board of Fire Underwriters, 85 John St., New York. 1940. 22 *pp. Free.*

Principles of construction which govern the spread and control of fire is the subject of this pamphlet, which discusses in relation to fire hazards: masonry walls; protection for windows; roofs; height of buildings; area of buildings and within buildings; exits; enclosure of stairways and elevator shafts and other vertical openings; fireproof construction; equipment to extinguish fires.

School Buildings and Grounds

The American School and University, 1940—A Yearbook Devoted to the Design, Construction, Equipment, Utilization, and Maintenance of Educational Buildings and Grounds. American School Publishing Corp., 470 Fourth Ave., New York. 623 *pp.* $2.50.

"During the past decade there has developed a school-plant consciousness that is challenging the best thinking in the nation on the subject of functional planning in terms of present and projected needs . . . modern school plants are becoming more than mere shells of our educational programs. . . . The demand for school-plant facilities that will accommodate educational offerings designed to meet modern needs is requiring of school administrators and school architects responsible for school-plant planning a more intimate and detailed knowledge of what a modern educational offering should provide, as well as familiarity with the essentially necessary space requirements that should be incorporated in the school plant. . . .

"Much has been written and discussed in recent years concerning modern educational needs, but those in responsible charge of planning new school plants to meet these educational needs find relatively little by way of authoritative guides in planning the new school plant. *The American School and University* is making an outstanding contribution that from year to year is being more widely recognized by school authorities and school architects in collecting and publishing authoritative information in this field."

Taken from this volume's Foreword, by Raymond V. Long, Director School Buildings, State Board of Education, Virginia, these excerpts point out the significance of this volume, and the need which it uniquely fills. In this twelfth annual edition, as in previous volumes, the subject matter is comprehensive, inclusive, arranged for quick reference, supplemented with numerous illustrations. Besides general discussion of building costs and financing, design and construction of buildings, operation and maintenance, articles cover special features and departments of the school plant: landscape design and development; physical education and athletics; classroom, library, auditorium; commercial department, administrative office; cafeteria, home economics, dormitory; laboratory design and equipment; shop planning and equipment; and transportation service. Again collected in convenient lists are names of architects for educational buildings; college, university and normal school presidents; presidents of junior colleges; heads of private schools; superintendents of schools; and aids available to local school boards from state departments.

Safety of Manholes

Ventilation of Manholes.—By G. W. Jones, W. E. Miller, and John Campbell. Bureau of Mines, U. S. Department of the Interior, Washington, D. C. 1940. 7 *pp.*

Former reports by the Bureau showed the effect on natural ventilation in manholes of the area of openings in manhole covers, and of the wind velocity of air passing across the manhole covers. This report gives the results of investigations showing the effect on natural ventilation of vertical ducts in combination with openings in manhole covers, and concludes that ventilation can be greatly increased by using two ducts, or a lower duct in combination with a ventilated manhole cover.

Swimming Pools

Data on Illinois Swimming Pools.—Division of Sanitary Engineering, Department of Public Health, Springfield, Ill. 1939. 11 *pp.*

List of swimming pools in Illinois, with ownership (municipal, private, state, Federal), location (indoor or outdoor), type of pool, and method of disinfection indicated in each case.

Public Works

Directory of New England Research and Engineering Facilities.—Engineering Societies of New England, Inc., in cooperation with the New England Council. Apply to the former, 715 Tremont Temple, Boston, Mass. 1939. 118 *pp.* $2.00.

Contained in this directory is a listing of the "New England research agencies, consulting services, colleges and universities available to New England's industrial, commercial and other interests, for the solving of their problems by the practical application of the research method." In each case, information is given concerning date of organization, laboratory facilities, services that have been rendered and that are available, and the training and experience of each member of the staff.

Traffic Control

The Story of Highway Traffic Control, 1899-1939.—By William Phelps Eno. The Eno Foundation for Highway Traffic Control, Inc., Saugatuck, Conn. 1939. xii + 294 *pp.* $4.00.

The personal, behind-the-scenes story of many of the major developments of traffic control, lends this book an unusual interest. Written by one of the outstanding pioneers in the field, it consists largely of letters to and from the author, and an informal narrative of his continuous activities over a period of 40 years in the interests of better street and highway traffic control in this country and abroad. Among others are the stories of the hard-won adoption of the "Rules for Driving," which became the first police traffic code ever written; of the principles of rotary traffic; of the use of safety isles; and of the establishment of the Foundation for Highway Traffic Control, affiliated with Yale University.

Planning

American Planning and Civic Annual.—Edited by Harlean James. American Planning and Civic Association, 901 Union Trust Building, Washington, D. C. 1939. vi + 288 *pp.* $3.00.

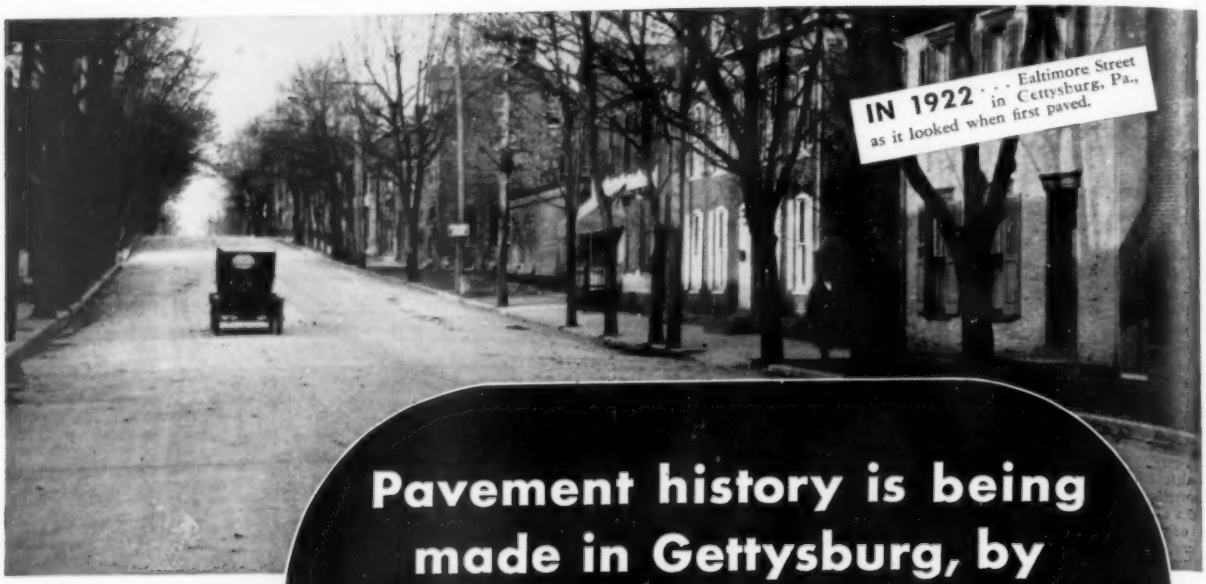
Of those papers given at the National Conference on Planning, at Boston, on May 15-17 of last year, and contained in this volume, there are several groups which have particular interest for city officials. One section, Factors in Community Reclamation, includes talks by noted planners, on housing, transportation and recreation. Another group relates planning to banking, business, civic organizations, education, public utilities, etc. Public works is the subject of another.

The Annual publishes also, of course, the proceedings of the National Conference on State Parks, which was held last June at Itasca State Park, Minnesota, and the National Park Conference of the American Planning and Civic Association with the National Park Officials, held at Santa Fé, New Mexico, in October.

Municipal Law and Liability

Municipalities and the Law in Action, 1939—Proceedings of the Mid-year and Annual Meetings of the National Institute of Municipal Law Officers.—Edited by John A. McIntire, Executive Director of the Institute, 730 Jackson Place, Washington, D. C. 1939. ix + 323 *pp.* $4.00.

Those legal problems which are currently of most concern to cities and their law officers, are subjects of papers in these proceedings, which aim to reflect municipal legal experience and research for the last year. They cover: taxation; housing; tort liability; public utilities; civil liberties; Federal, state and city relations; airports and local problems of aviation; building codes; building trades anti-trust investigation; ordinances and ordinance enforcement.



Pavement history is being made in Gettysburg, by *long-lasting, economical* CONCRETE STREETS

TODAY . . . After nearly two decades of arterial traffic, the *original concrete surface* is still smooth-riding and satisfactory, with a fine record for low maintenance.

In 1922 historic Gettysburg started a street improvement program with concrete. Today, the pavement is mostly 16 to 18 years old and it is *all in excellent condition.* We quote the statement of L. H. Winebrenner, Borough Surveyor of Gettysburg:

"Baltimore Street is in excellent condition and the other concrete streets are equally as good. Neither the Borough nor the State has needed to spend much money on maintenance; only seal the cracks. No surface work has been required. The cost of maintaining the concrete has been less than one-fifth that of other types of surfaces."

This experience checks with that of many other city officials. Concrete's consistently low maintenance, coupled with its moderate first cost and long life, almost invariably result in *lowest annual cost.*

It's real economy to give your citizens the safety, cleanliness and riding comfort of concrete streets.

PORTLAND CEMENT ASSOCIATION
Dept. 4-4, 33 W. Grand Ave., Chicago, Illinois
A national organization to improve and extend the uses of concrete . . . through scientific research and engineering field work

The More Concrete Streets the Less Maintenance Expense

When you write for that catalog, kindly mention THE AMERICAN CITY.

Housing Costs and Facts

What Does the Housing Program Cost?—United States Housing Authority, Federal Works Agency, Washington, D. C. 1940. 32 *pp.*

Probably the most discussed and disputed aspect of the much-discussed and disputed housing program—its cost—is the subject of this brief publication. Precisely and simply stated are the facts concerning the present and future cost of public housing: summary annual costs; a general statement of the USHA financing plan; an example of what the plan costs per family; answers to common fallacies about the plan; the merits of the case.

Introduction to Housing Facts and Principles.—By Edith Elmer Wood. United States Housing Authority, Federal Works Agency, Washington, D. C. 1940. *xi* + 161 *pp.* 30c.

A concise, comprehensive presentation of the fundamentals and basic statistics of the housing problem in America, stated non-technically, by one of the country's housing pioneers. The publication surveys the general housing picture in relation to population and income distribution, conditions and standards of housing throughout the country, and the reasons for the housing situation. It calculates the cost of bad housing in preventable sickness and death, in juvenile delinquency and crime, in excessive taxes. The housing needs of the country, and the factors which enter into supplying them, are submitted to analysis. One of the interesting features of the publication is a discussion and a clearing-up of 16 popular fallacies about housing.

Two companion pamphlets published by the Public Affairs Committee, 30 Rockefeller Center, New York. 1940. *Each 32 pp. Each 10c for single copies; $2.00 for 25 copies:*

The Homes the Public Builds.—By Edith Elmer Wood and Elizabeth Ogg. Public Affairs Committee, 30 Rockefeller Center, New York. 32 pp. Single copies, 10c; 25 copies, $2.00.

One Michael Grady wants to know, "What's a public housing project anyway?" And in the pages of this informal, conversational little pamphlet, directed toward the average citizen, he and his friend Bill Johnson find out the principal whys and whats of public housing, and the answers to some of the common questions and crticisms that are directed toward it.

Can America Build Houses?—By Miles L. Colean.

This revised pamphlet shows briefly and simply the economic and industrial roots of the housing problem, measures that are being taken to remedy or ameliorate it, and what more needs to be done. It relates the problem to the citizen, and shows him his place in its solution.

Motor Accidents

Smash Hits of the Year—The Travelers 1940 Book of Street and Highway Accident Data.—The Travelers Insurance Company, Hartford, Conn. 1940. 38 *pp. Free.*

Last year 32,100 people were killed in "smash hits" that occurred, not on stage or screen, but on highways and streets. The Travelers Insurance Company issues again its dramatic annual booklet showing the major causes of traffic accidents, and the rules that drivers and, particularly, pedestrians must obey in order to stay alive on the highway.

Traffic Accident Analysis

Report of Traffic Accidents during 1939.—Department of Streets and Sewers, St. Louis, Mo. 1940. 124 *pp.*

What are the principal causes of traffic accidents in St. Louis? How has the accident record in 1939 compared with that of the two previous years? What has been done and what should be done to further reduce accidents in this city?—these are the questions that are taken up in this report, which consists largely of tables with a brief discussion.

Intergovernmental Relations

Intergovernmental Relations in the United States—January, 1940, issue of The Annals. The American Academy of Political and Social Science, 3457 Walnut St., Philadelphia, Pa. 218 *pp.*

A frontier problem of government—the relations between its different levels—is broadly surveyed by a wide representation of authors in this issue of *The Annals.* Federal Relations with Other Units, Interstate Relations, Regionalism, Interrelations of Local Units, Some Considerations for the Future, are headings of the five sections, of which that dealing with local units will most interest AMERICAN CITY readers. Contained in this are discussions of fiscal aspects of state-local relations, the politics of integration in metropolitan areas, county consolidation, municipal government and special-purpose authorities. Other articles deal with the relation of municipalities to the Federal Government, and to regional authorities.

Power and Building Projects

Business Methods in the Building Field.—By George Schobinger, Member, American Society of Civil Engineers, and Alexander M. Lackey. McGraw-Hill Book Company, Inc., New York. 1940. *xv* + 350 *pp.* $3.50 *from* THE AMERICAN CITY.

With the increasing specialization in construction operations and the accumulation of accurate and applied scientific knowledge, the work of the engineer and architect is less involved with technical calculations and pure design, and more involved with administrative activities in the conduct of business transactions—"he has become in the broadest sense the business representative of his client." It is with the efficient administration of these business functions as distinguished from the technical functions of the architect and engineer, that this book is concerned. It deals primarily with the principles and procedures involved in the production of adequate contractual documents. Numerous specimen forms are included. This book is, of course, of as much interest to those involved in public as in private construction.

Planning Agencies

Directory of State, Territorial and Regional Planning Agencies.—National Resources Planning Board, Washington, D. C., Executive Office of the President, Washington, D. C. 1940 (*revised edition*). 34 *pp.*

Listed in this publication are the legal status and membership of state, territorial and regional planning agencies in the country, and the National Resources Planning Board's field offices, its regional chairmen, counselors and planning technicians.

New York Parks

Six Years of Park Progress.—Department of Parks, New York. 1940. 56 *pp.*

Effectively illustrated and styled, this report records the accomplishments of New York's progressive park program during the last six years. How the park system has been reorganized, how land has been acquired for recreational purposes, and the great increase in playgrounds and parks, swimming pools and beaches, parkways, museums, and other recreation facilities are described briefly. Costs are discussed and plans for the future.

The Changing City.—By Robert Moses, Commissioner, Department of Parks, New York; pp. 141-156, March, 1940, issue of The Architectural Forum.

Under the swift direction of Robert Moses, the pattern of New York has undergone transformation: new parks, playgrounds, beaches, parkways, bridges, public buildings, statues; swamps and dumps reclaimed, eyesores torn down, historic landmarks renovated. In this dramatic, illustrated account of New York's park, recreation and parkway accomplishments in the last six years, Mr. Moses describes the technique by which so many public works have been carried out, and incidentally reveals the spirit of the man who is the moving force behind these accomplishments.

Elections

A Model Registration System—Report of the Committee on Election Administration.—Prepared by Joseph P. Harris, University of California, for the National Municipal League, 299 Broadway, New York. 3rd revised edition, 1939. 73 *pp.* 50c.

Rather than presenting a model law which could be adopted *in toto* by any state, this report contains recommended specifications which can be adapted to any election system, incorporating the best features of the most successful existing registration systems. It also describes in detail the present status of registration for voting in the different states and cities in this country, and points out the need for improvement in existing systems.

Recreation

Gardening — School, Community, Home.—National Recreation Association, 315 Fourth Ave., New York. 1940. 60 *pp.* 50c.

Based on a study of present gardening projects in the country, this inviting manual outlines suggestions for the administration and organization of children's and adult gardening programs. It discusses, besides home and school projects, those sponsored by community organizations, under the heads of community survey, choosing the program, financing, initiating the program, leadership, publicity, etc. Successful programs that have been carried out in a dozen cities are described. Sources of help—organizations and printed matter—are listed.

Other Reports Received

BELOIT, WIS.—Annual Report, City Manager, 1939. 38 pp.

BRIDGEPORT, CONN.—Municipal Register, 1937, Containing the Messages of the Mayor, Reports of the Commissions and Other Public Documents, together with a Directory of City Officials. Apply to the Comptroller. 292 pp.

CLEVELAND, OHIO.—"Seeing and Traffic Safety." Nela Park Engineering Department, General Electric Co. 24 pp.

ESCANABA, MICH.—Development of Municipal Services, 1922-1938. 56 pp. (See p. 84 of this issue for excerpts from this report.)

HONOLULU, HAWAII.—"Surface Water Resources," 1901-1938. 411 pp.

"An Historic Inventory of the Physical, Social and Economic and Industrial Resources." 467 pp. Both by Territorial Planning Board.

JAMESTOWN, N. Y.—Annual Report, Board of Public Utilities, 1939. 35 pp.

LYNCHBURG, VA.—Annual Report, 1939. 47 pp.

MANSFIELD, MASS.—Annual Report, Town Officers, 1939. 144 pp.

MILWAUKEE, WIS.—Annual Review, Board of Public Land Commissioners, 1939. 13 pp.

NEW YORK, N. Y.—Fire Department Equipment: Section 2, Forcible Entry Equipment; Section 3, Fire Department Ladders. The Educational Committee, International Association of Fire Chiefs, 24 W. 40th St., New York. 15 pp. 25c.

NORTHUMBERLAND, N. H.—Annual Report of the Municipal Officers, year ending Jan. 31, 1940. 60 pp.

OAK PARK, ILL.—Annual Report, Water Department, 1939. 27 pp.

ROANOKE, VA.—Financial Report, City Auditor, 1939. 58 pp.

ST. LOUIS, MO.—Annual Report, City Plan Commission, year ending Apr. 10, 1939. 51 pp.

SALEM, VA.—Annual Report, year ending June 30, 1939. 43 pp.

TORONTO, CANADA.—Annual Report, Assessment Commissioner, 1939. 40 pp.

WORCESTER, MASS.—Annual Planning Conference, Oct. 20, 1939. 86 pp.

YONKERS, N. Y.—"Housing in Yonkers." The Municipal Housing Authority. 27 pp.

Lake Michigan Plant REDUCES TASTE AND ODOR WITH GENERAL CHEMICAL ALUMINUM SULFATE

Water Purification Plant—Highland Park, Ill.—George B. Prindle, Supt.

The Highland Park water purification plant, like many other shore plants in the Great Lakes region, is fortunate in having an almost inexhaustible source of reasonably pure water.

Yet surface waters as a source of water supply are cause for worry to the plant operator during periods of calm weather and bright sunlight . . . when various diatoms and other micro-organisms thrive in abundance around the water works intake. Some of these organisms produce disagreeable tastes and odors in the water, while the silica encased bodies of others interlace on the sand surface of the filters and greatly reduce the length of filter runs.

General Chemical Aluminum Sulfate is an indispensable first line defense against taste and odor troubles, supplementing other methods of control. Prominent water works authorities state that 25% to 50% of taste and odor may be removed in the settling basins by adequate coagulation. Such coagulation also carries down in the settling basins the filter clogging organisms which shorten filter runs. We welcome your inquiries on such problems. Write to

MAKE YOUR PLANS TO ATTEND THE 60th ANNUAL MEETING OF THE AMERICAN WATER WORKS ASSOCIATION, KANSAS CITY, MO., THE WEEK OF APRIL 21, 1940.

GENERAL CHEMICAL COMPANY

GENERAL CHEMICAL COMPANY

40 RECTOR STREET NEW YORK, N. Y.

Sales Offices: Atlanta • Baltimore • Boston • Buffalo • Charlotte (N. C.) • Chicago • Cleveland • Denver • Houston • Kalamazoo • Kansas City • Los Angeles • Milwaukee • Minneapolis • Montezuma (Ga.) • Philadelphia • Pittsburgh • Providence (R. I.) • San Francisco • St. Louis • Utica (N. Y.) • Wenatchee (Wash.) • Yakima (Wash.)

In Canada: The Nichols Chemical Company, Limited • Montreal • Toronto • Vancouver

Conventions - - When and Where

Meeting is annual convention unless otherwise designated

APRIL 21-25.—KANSAS CITY, MO.
American Water Works Association. (Hotels Phillips, President and Muehlebach). Sec., Harry E. Jordan, 22 E. 40th St., New York.

MAY 8-11.—ATLANTIC CITY, N. J.
National Fire Protection Association. (Haddon Hall.) M'ng Dir., Percy Bugbee, 60 Batterymarch St., Boston, Mass.

MAY 9-10.—AKRON, OHIO.
American Water Works Association — Ohio Section. (Mayflower Hotel.) Sec., T. R. Lathrop, State Dept. of Health, Columbus, Ohio.

MAY 9-11.—PORTLAND, ORE.
American Water Works Association—Pacific Northwest Section. (Portland Hotel.) Sec., Fred Merryfield, Oregon State College, Corvallis, Orc.

MAY 10-11.—GREAT FALLS, MONT.
Montana Municipal League. (*Civic Center.*) Sec.-Treas., M. J. Mee, 519 Birch St., Anaconda, Mont.

MAY 13-17.—PITTSBURGH, PA.
National Association of Housing Officials. (William Penn Hotel.) Annual meeting, 15-17, preceded by Managers' Div., 13-14. Sec., Coleman Woodbury, 1313 E. 60th St., Chicago, Ill.

MAY 16-18.—JACKSONVILLE, FLA.
American Water Works Association—Florida Section. (Seminole Hotel.) Sec., A. P. Black, Univ. of Florida, Gainesville, Fla.

MAY 16-17.—SALISBURY, MD.
Maryland-Delaware Water and Sewerage Association. (Wicomico Hotel.) Sec., A. W. Blohm, 2411 N. Charles St., Baltimore, Md.

MAY 20-21.—CATALINA ISLAND, CALIF.
California Sewage Works Association. Spring conference. Sec., Fred D. Bowlus, 202 Law Bldg., Los Angeles, Calif.

MAY 21-24.—ST. LOUIS, MO.
Smoke Prevention Association. Sec., Frank A. Chambers, City Hall Square Bldg., Chicago, Ill.

MAY 22-24.—CHICAGO, ILL.
American Water Works Association—Illinois Section. (Congress Hotel.) Sec., H. E. Hudson, Jr., 6843 Oglesby Ave., Chicago, Ill.

MAY 23-24.—EVERETT, WASH.
Association of Washington Cities. (Monte Cristo Hotel.) Exec. Sec., Chester Biesen, Univ. of Washington, Seattle, Wash.

MAY 23-24.—DETROIT, MICH.
Community Chests and Councils, Inc. (Book-Cadillac Hotel.) Exec. Vice-Pres., Allen T. Burns, 155 E. 44th St., New York.

MAY 23-24.—SEASIDE, ORE.
League of Oregon Cities. (Hotel Seaside.) Sec., Herman Kehrli, Univ. of Oregon, Eugene, Ore.

MAY 26-28.—ST. LOUIS, MO.
National Association of Tax Administrators. (Hotel Statler.) Exec. Sec., Albert Lepawsky, 1313 E. 60th St., Chicago, Ill.

MAY 27-28.—JOPLIN, MO.
Joint meeting. (Connor Hotel.) *Missouri Association of Mayors and Other Municipal Officials and Missouri Municipal Association.* Exec. Sec., George A. Spencer, 412 Guitar Bldg., Columbia, Mo.

JUNE 3-6.—ST. LOUIS, MO.
Building Officials' Conference of America. (Hotel Jefferson.) Sec.-Treas., William F. Hurd, Commissioner of Bldgs., Indianapolis, Indiana.

JUNE 6-7.—ITHACA, N. Y.
American Water Works Association—New York Section. (Hotel Ithaca.) R. K. Blanchard, 50 W. 50th St., New York.

JUNE 6-8.—WILMINGTON, DEL.
Eastern Association of Fire Chiefs. (Hotel Du Pont.) Sec., Charles E. Clark, Box 217, Wayne, Pa.

JUNE 10-12.—ROCHESTER, N. Y.
Conference of Mayors and Other Municipal Officials of the State of New York. Exec. Sec., William P. Capes, City Hall, Albany, N. Y.

JUNE 17-19.—TWO HARBORS, MINN.
League of Minnesota Municipalities. (High School Bldg.) Executive Secretary, C. C. Ludwig, University of Minnesota, Minneapolis, Minn.

JUNE 17-19.—DETROIT, MICH.
Municipal Finance Officers' Association of the United States and Canada. (Hotel Statler.) Exec. Dir., Carl H. Chatters, 1313 E. 60th St., Chicago, Ill.

JUNE 20-22.—SYRACUSE, N. Y.
New York State Sewage Works. (Hotel Syracuse.) Sec.-Treas., A. S. Bedell, State Dept. of Health, Albany, N. Y.

JUNE 24-27.—ST. JOSEPH, MICH.
Michigan Association of Chiefs of Police. (Hotel Whitcomb.) Sec.-Treas., Oscar G. Olander, City Commissioner, East Lansing, Michigan.

JUNE 24-26.—STATE COLLEGE, PA.
Pennsylvania State Association of Boroughs. (Nittany Lion Hotel.) Pres., Thomas F. Chrostwaite, Hanover, Pa.

JUNE 24-28.—STATE COLLEGE, PA.
Pennsylvania Water Works Operators' Association. Sec.-Treas., I. M. Glace, 22 S. 22d St., Harrisburg, Pa.

JUNE 25-27.—DIXVILLE NOTCH, N. H.
New England Association of Fire Chiefs. (Balsams Hotel.) Sec., John W. O'Hearn, Watertown, Mass.

JUNE 26-28.—STATE COLLEGE, PA.
Pennsylvania Sewage Works Association. (State College Campus and Nittany Lion Hotel.) Sec., L. D. Matter, Kirby Health Center, Wilkes-Barre, Pa.

JUNE 30-JULY 4.—MILWAUKEE, WIS.
National Education Association of the United States. Exec. Sec., Willard E. Givens, 1201 16th St., N. W., Washington, D. C.

JULY 8-12.—SAN FRANCISCO, CALIF.
National Conference on Planning. (Fairmont Hotel.) Joint annual conference of American Society of Planning Officials, American Institute of Planners, the American Planning and Civic Association, and the National Economic and Social Planning Association. Conference Dir., Walter H. Blucher, 1313 E. 60th St., Chicago, Ill.

JULY 21-26.—STANFORD UNIVERSITY, CALIF.
Western Conference for Commercial and Trade Executives. (Lagunita Court.) Business Mgr., Leonard E. Read, 1151 S. Broadway, Los Angeles, Calif.

JULY 23-25.—NEW YORK CITY.
New York State Association of Chiefs of Police. (Hotel Astor.) Sec.-Treas., R. W. Morris, Box 346, Geneva, N. Y.

JULY 23-25.—WILLIAMSPORT, PA.
Pennsylvania Chiefs of Police Association. (Lycoming Hotel.) Sec., F. B. Titus, Lansdowne, Pa.

AUGUST 5-8.—SPOKANE, WASH.
International Association of Fire Chiefs. (Davenport Hotel.) Sec., James J. Mulcahey, 16 Franklin Ave., Yonkers, N. Y.

AUGUST 18-24.—EVANSTON, ILL.
National Institute for Commercial and Trade Organization Executives. (Northwestern Univ.) Sec., C. R. Miles, 832 First Nat'l Bank Bldg., Chicago, Ill.

AUGUST 22-24.—LOGAN CITY, UTAH.
State Municipal League of Utah. (Eccles Hotel.) Sec., Tom McCoy, Public Safety Bldg., Salt Lake City, Utah.

AUGUST 27-30.—DETROIT, MICH.
National Shade Tree Conference. (Book-Cadillac Hotel.) Sec.-Treas., L. C. Chadwick, Ohio State Univ., Columbus, Ohio.

SEPTEMBER 5-6.—PIERRE, S. DAK.
League of South Dakota Municipalities. (St. Charles Hotel.) Sec., A. E. Mead, Univ. of South Dakota, Vermilion, S. Dak.

SEPTEMBER 9-12.—SPRING LAKE, N. J.
Illuminating Engineering Society. (Essex and Sussex Hotel.) Gen. Sec., A. D. Cameron, 51 Madison Ave., New York.

SEPTEMBER 9-12.—MILWAUKEE, WIS.
International Association of Chiefs of Police. (Hotel Schroeder.) Exec. Vice-Pres., William P. Rutledge, 1313 E. 60th St., Chicago, Ill.

SEPTEMBER 9-12.—BALTIMORE, MD.
National Association of Assessing Officers. (Lord Baltimore Hotel.) Exec. Dir., Albert W. Noonan, 1313 E. 60th St., Chicago, Ill.

SEPTEMBER 11-13.—ANN ARBOR, MICH.
American Water Works Association—Michigan Section. (Michigan Union.) Sec., M. N. Gerardy, Water Board Bldg., Detroit, Mich.

SEPTEMBER 16-17.—DENVER, COLO.
American Water Works Association—Rocky Mountain Section. Sec., B. V. Howe, State Office Bldg., Denver, Colo.

SEPTEMBER 16-20.—DUBUQUE, IOWA.
International Association of Fire Fighters. (Julian Hotel.) Sec.-Treas., George J. Richardson, A. F. of L. Bldg., Washington, D. C.

SEPTEMBER 16-19.—SAN DIEGO, CALIF.
League of California Cities. Sec., Richard Graves, 2121 Allston Way, Berkeley, Calif.

SEPTEMBER 18-20.—NEW CASTLE, PA.
American Water Works Association—Western Pennsylvania Section. (Castleton Hotel.) Sec., E. P. Johnson, 418 Flannery Bldg., Pittsburgh, Pa.

SEPTEMBER 18-20.—ROCK ISLAND, ILL.
Illinois Municipal League. (Fort Armstrong Hotel.) Exec. Dir., A. D. McLarty, 500 E. Capitol Ave., Springfield, Ill.

SEPTEMBER 22-24.—ROANOKE, VA.
League of Virginia Municipalities. (Hotel Roanoke.) Exec. Sec., Morton L. Wallerstein, 902 Travelers Bldg., Richmond, Va.

SEPTEMBER 24-27.—CLEVELAND, OHIO.
American Institute of Park Executives and the American Park Society. (Hotel Statler.) Exec. Sec., Will O. Doolittle, Box 422, Tulsa, Oklahoma.

SEPTEMBER 24-27.—NEW YORK CITY.
New England Water Works Association. (Hotel Commodore.) Sec., Frank J. Gifford, 613 Statler Bldg., Boston, Mass.

SEPTEMBER 30-OCTOBER 2.—DETROIT, MICH.
American Public Works Association. Exec. Dir., Frank W. Herring, 1313 E. 60th St., Chicago, Ill.

SEPTEMBER 30-OCTOBER 4.—CLEVELAND, OHIO.
National Recreation Association. (Hotel Statler.) Sec., Howard S. Braucher, 315 Fourth Ave., New York.

OCTOBER 7-11.—CHICAGO, ILL.
National Safety Council. (Stevens Hotel.) M'n'g Dir., W. H. Cameron, 20 N. Wacker Drive, Chicago, Ill.

OCTOBER 8-11.—DETROIT, MICH.
American Public Health Association. (Book-Cadillac Hotel.) Exec. Sec., Dr. Reginald M. Atwater, 50 W. 50th St., New York.

OCTOBER 14-17.—TULSA, OKLA.
American Water Works Association—Southwest Section. (Mayo Hotel.) Sec., Lewis A. Quigley, 3320 W. Berry St., Fort Worth, Texas.

OCTOBER 14-17.—JACKSONVILLE, FLA.
International Municipal Signal Association, Inc. (George Washington Hotel.) Sec., Irvin Shulsinger, 8 E. 41st St., New York.

OCTOBER 14-18.—DETROIT, MICH.
National Association of Public School Business Officials. (Book-Cadillac.) Sec., H. W. Cramblet, Board of Education, Pittsburgh, Pa.

OCTOBER 18-19.—ATLANTIC CITY, N. J.
American Water Works Association—New Jersey Section. (Madison Hotel.) Sec.-Treas., C. B. Tygert, Box 178, Newark, N. J.

OCTOBER 23-25.—LEXINGTON, KY.
American Water Works Association—Kentucky-Tennessee Section. (Lafayette Hotel.) Sec.-Treas., Howard D. Schmidt, 420 6th Ave., N., Nashville, Tenn.

OCTOBER 23-26.—LOS ANGELES, CALIF.
American Water Works Association—California Section. (Biltmore Hotel.) Sec., Burton S. Grant, Box 240, Arcade Annex, Los Angeles, Calif.

NO VIBRATION CHATTER OR LINE SHOCK

CLAYTON

Feather-Touch Control

FLOAT VALVES

Reduce Water System Operating COSTS!

Not *Just Another* Float Valve... but a Float Controlled *Hydraulically Operated* Valve!

That's the new Clayton *Feather-Touch* Control Float Valve. It introduces a new operating principle that banishes float valve troubles... line shock, chatter and vibration. The Clayton Valve is always wide open or drip-tight shut. No lingering in a partially opened or closed position. No "wire drawing" to cause wasteful leaks. Surface disturbances do not affect the Clayton valve to produce a constant opening and closing action with every surge. *Feather-Touch* means just that... a 2 ounce pressure on the float, or pilot arm, will close or open the Clayton Valve, regardless of capacity or pressure of the flow being controlled.

THE VALVE OF COUNTLESS USES

Flow and level control problems disappear with the installation of the Clayton *Feather-Touch* Controlled Valve, adaptable to many uses never before practicable with ordinary float valves. Hydraulic operation under *Feather-Touch* control replaces troublesome and undependable direct leverage between float and valve. The Clayton Valve opens and closes smoothly by utilizing the line pressure, respectively expelled or admitted to a hydraulic chamber by the slight movement of the float operated pilot valve. The small float ball travels vertically on a guide rod fitted with adjustable "stops" set at the high and low water control levels. These control levels may be inches or many feet apart. In remote control installations, direct mechanical linkage is eliminated. Pilot and float unit are connected to the valve by means of copper tubing only, irrespective of distance or position. Made in all standard sizes.

SOLD BY CRANE CO.

SEND COUPON FOR THE "FEATHER-TOUCH" STORY

CLAYTON MANUFACTURING CO. AC-4
ALHAMBRA, CALIFORNIA

Send.....copies of your fully illustrated catalog section on Clayton *Feather-Touch* control float valves, with prices, to:

NAME.....TITLE.....
COMPANY.....
ADDRESS.....
CITY.....STATE.....

Stewart FENCES

FOR ALL PUBLIC PROPERTY

● City officials throughout the country are selecting Stewart Iron and Wire Fences to beautify and protect parks, playgrounds, buildings, institutions and other public property. They know Stewart Fences provide lifetime protection at the lowest per year cost.

Other Stewart Products for public property uses comprise: Settees, steel folding chairs, wire mesh partitions, trash receptacles, flag poles, bronze plaques, and many others. When writing for information, please mention products in which you are interested.

Sales and erection offices in principal cities.

Stewart IRON and WIRE FENCES

The Stewart Iron Works Co., Inc.
721 Stewart Block
Cincinnati, Ohio

HEIL UNITS CUT COSTS

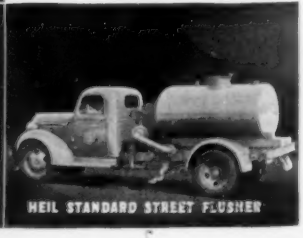
HEIL HYDRAULIC "SL" DUMP UNIT

HEIL CONVEYOR SANITATION UNIT

Popular Heil Hoists, Bodies and Tanks are designed and built for heavy-duty service . . . Experienced Heil Transportation engineers are prepared to give you equipment exactly suited to your needs . . . Get Heil recommendations before you buy—Address:

THE HEIL CO.
MILWAUKEE, WISCONSIN
HILLSIDE, NEW JERSEY

HEIL STREAMLINE WATER TANK



HEIL STANDARD STREET FLUSHER

News and Illustrations

Items of Interest to City, Town and County Officials, and Others Concerned with the Economical Construction and Efficient Operation of Public Improvement Undertakings

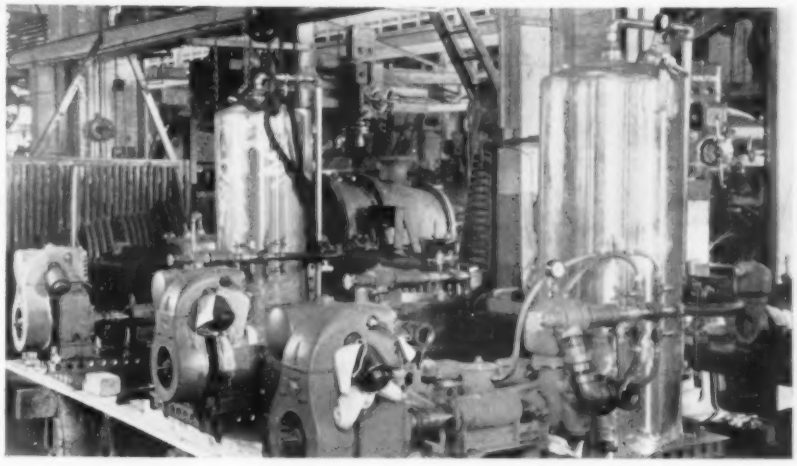
Purification Packaged for Small Water Works

An interesting solution of water-purification problems in places where the rate of flow is small has been prepared by Proportioneers, Inc., 9 Codding Street, Providence, R. I., in its packaged Pur-O-Pumpers. The package may include for complete purification: filtration; chlorination; coagulation; pH Control; pumping; gasoline engine or other drive, giving portability due to light weight.

The accompanying illustration shows three complete pumping, treating and filtering plants weighing only 700 pounds each, which were built for the United States Army. The first four of these units purchased by the Government were awarded on competitive bidding.

These Pur-O-Pumpers will prove particularly valuable for contractors and other organizations which have groups of men in the field, on the move, and working where the water supply must be safe though temporary. The Pur-O-Pumpers are also applicable to water supplies for summer resorts, camps, temporary swimming holes, and other places where a small water-supply system is installed seasonally, or where the water supply must be moved from year to year.

This standard package has been built and tested with pumping capacity and filtering rates of nearly 20 gpm, and through by-passing the filters may operate as a straight pumping and chlorination plant up to 40 gpm. Plants of this size as a complete unit, including everything listed, cost from $1,500 down, depending on the size. Larger units can be furnished by sacrificing to some extent the feature of portability. By reducing the capacity requirements, even smaller Pur-O-Pumpers are available.



Three Pur-O-Pumpers Ready for Use by the United States Army

On Government tests these units have reduced 100 turbidity waters to 3 turbidity, and 0.3 residual chlorine; 200 turbidity water was reduced to 20; these results being at pumping rates of 12 to 15 gpm without back-washing between runs of 2 hours duration, during which about 2,000 gallons total was pumped.

Service Line Trenches Bored Instead of Dug

Hydrauger, the mechanical gopher, is the subject of a new Bulletin, No. 7, issued by Hydrauger Corporation, Ltd., 116 New Montgomery Street, San Francisco, Calif. This 8-page bulletin describes the heavy-duty Hydrauger and illustrates it in great detail. Among the features are the new target control for increasing the accuracy of boring lines beneath streets for inserting or replacing water-service lines and pipes up to 12 inches in diameter. Actual boring speeds vary, depending upon the formation through which the boring is done, but ordinary soils can be penetrated with an 8½-inch hole at the rate of approximately 40 feet per hour, while heavy clay reduces the speed to 20 or 30 feet per hour. Rotten rock or shale bores at approximately 3 inches per minute, while solid limestone may require 15 minutes per foot.

In addition to the heavy-duty Hydrauger, there is a feather-weight Model L for bores up to 4½ inches in diameter. Copies of Bulletin No. 7 may be secured free on request by readers of THE AMERICAN CITY mentioning this article.

The Littleford street flusher with automatic controls. Each nozzle works independently. This flusher is a complete self-starting unit. Cities, small towns and villages use street flushers also for fire fighting and sewer cleaning

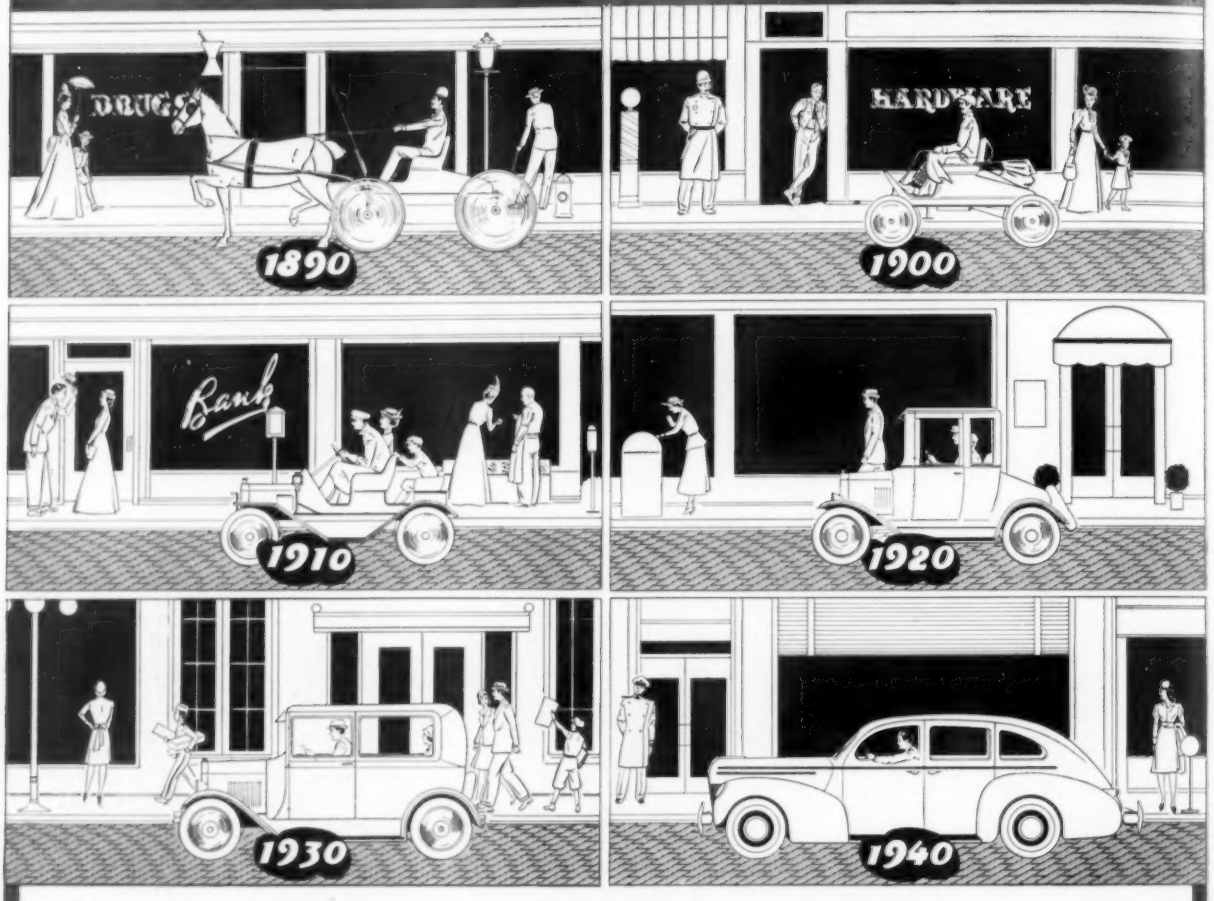
Steffey Made President of Prismo Safety Corp.

Charles E. Steffey, formerly with the National Cash Register Co., has been appointed President and General Manager of the Prismo Safety Corporation, Huntingdon, Pa. Gilbert Rodli will continue as Vice-President and assist Mr. Steffey in carrying out an aggressive sales campaign, which is soon to be announced.

During the 16 years that Mr. Steffey was Vice-President, Director and General Sales Manager of National Cash Register, their organization knew its period of most rapid expansion and largest sales volumes and profits. Mr. Steffey became interested in the development of Prismo and has watched it for more than a year and has talked with users and representatives of Prismo, making a very thorough survey and study of the application and possibilities of Prismo products for highway safety.

The pavement with the

LOWEST COST PER YEAR OF SERVICE

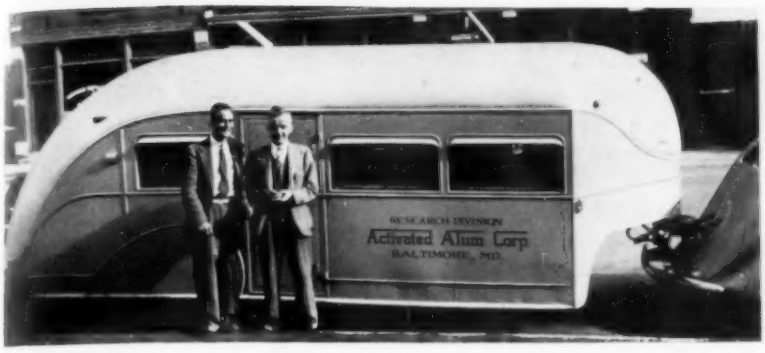


● Some brick pavements built in the 90's are still giving satisfactory service today. No other type of pavement has so long a life! Brick's maintenance cost is usually negligible—often nil. . . . The reason for brick's long life and low cost per year of service is because it resists weather damage as well as traffic damage. Moisture does not enter the brick to freeze and destroy. . . . Built according to modern methods brick serves high speed traffic and heavy vehicles at a minimum cost. National Paving Brick Association, National Press Bldg., Washington, D. C.

BRICK

FOR NEW CONSTRUCTION OR RESURFACE WORK

Mention THE AMERICAN CITY—it helps.



The Activated Alum Corp. Traveling Research Laboratory Carries the Filtersweep Message

Filter Surface Washers Eliminate Mud Balls

Any filter plant operator or waterworks superintendent who has experienced mud balls in his filters knows what a curse they can be to efficient operation. In the past few years, starting in the Lake Michigan district, surface washing has been practiced and has been effective in breaking up mud balls or preventing their formation. The Palmer Filtersweep, made by the Palmer Engineering Co., Erie, Pa., and sold by Activated Alum Corporation, Curtis Bay, Baltimore, Md., is a new and effective surface washing unit for rapid sand filters.

The Filtersweep consists of a revolving tube, the section of which is reduced as the distance from the center increases, and to which are attached ¼-inch nozzles delivering water at a pressure of 75 pounds per square inch, giving a nozzle velocity of approximately 115 feet per second. With the moving arm revolving in a horizontal plane just below the surface of the filter, the jets hit the sand grains as they are lifted by the wash water and thoroughly clean them, preventing the formation of mud balls.

Experience at numerous plants where these have been installed shows that the volume of wash water is reduced 50 per cent, mud balls are definitely eliminated, the filter sand is maintained in a more cleanly condition, the filter runs are lengthened, and the capacity of the plant is increased by maintaining higher rates of filtration.

With such an installation a filter may be capped with Anthrafilt to a depth of 8 or 10 inches, producing longer runs. After a few months of service, however, large deposits of mud usually occur between the sand and the Anthrafilt, which necessarily means that the filter would not operate successfully with this accumulation. The Palmer filter agitator revolving slowly under the expanded bed keeps the sand as well as the Anthrafilt clean, and the bed can be run continuously at much higher rates than 2 gallons per square foot per minute and produce satisfactory effluents. This is a big help to plants that are operated at capacity and need extra filtration capacity for peak demands.

Addressing Machine with No Plates

A specially designed addressing machine for use where a limited number of repeat mailings to the same name does not warrant the use of address plates or stencils has been announced by the Burroughs Adding Machine Co., Detroit, Mich. Since it handles pre-stuffed envelopes easily, the front-insertion typewriter addressing machine effects savings by permitting the envelope contents to be inserted in advance by the printer, or by clerks during spare time, so that there will be no delay in mailing after addressing. This Burroughs machine also has such new advantages as addressing empty envelopes, postcards, notices, labels, shipping, tags, etc.

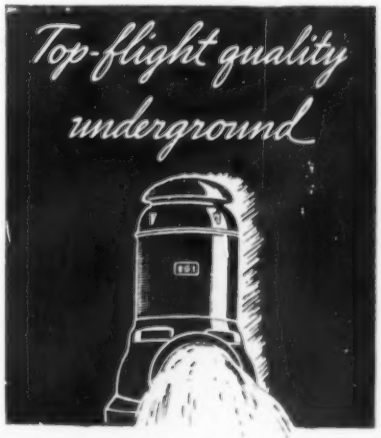
Forms are dropped in the machine's front feed chute rather than inserted around the platen. Alignment is automatic. In the case of cards, empty envelopes, labels, etc., several copies can be placed in the chute at one time and each removed as it is completed. The chute may have one or more depth lines for various size forms, or for writing in different positions.

Equally valuable from the user's standpoint is the quick-action pressure bail which locks the forms in place. This eliminates slipping and shadowing, and results in neat, clear type impressions.

Burroughs electric carriage return, electric platen spacing and electrical capital shift are helpful in addressing, since writing-lines are short, carriage-returns frequent, and capital letters numerous.

See Convention List, page 145, this issue.

The Palmer Filter Bed Agitator for Preventing Mud-Ball Formation and Reducing Wash Water Requirements in Rapid Sand Filters

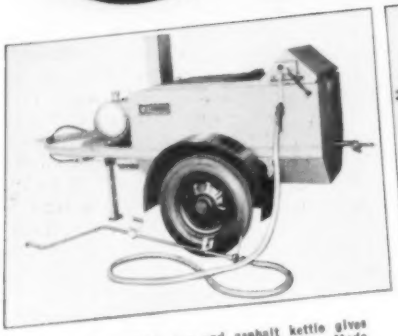


If you are seeking a deep well pump in which the original high efficiency will be maintained for years to come, check up on Peerless. It's actually miracle performance. Learn about the amazing new HI-LIFT Pump, most revolutionary of all designs. Illustrated catalog presents the complete 1940 line, showing new and exclusive features.

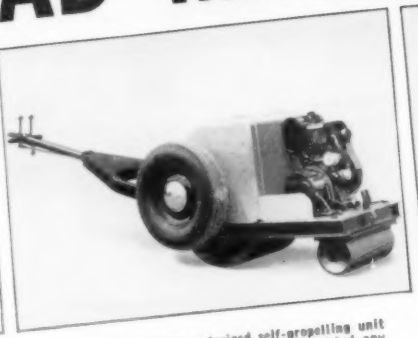
PEERLESS PUMP DIVISION
Food Machinery Corporation
Factories: Los Angeles, San Jose, Fresno, Calif. Massillon, Ohio

Peerless Pumps
Turbine,
Hi-Lift & Propeller

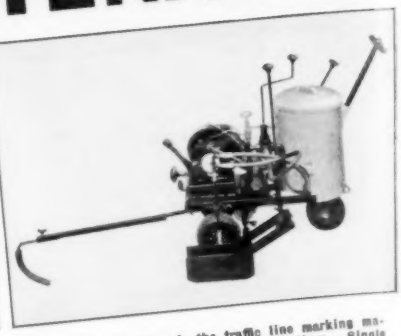
THIS LITTLEFORD EQUIPMENT MEANS LOW COST . . ROAD MAINTENANCE



84-HD Kettle—This tar and asphalt kettle gives faster heating, continuous flow of materials. Made in sizes from 75 to 300 gals.



Wheeled Roller—This motorized self-propelling unit can be trailed from one job to another behind any truck. Designed to roll patches.

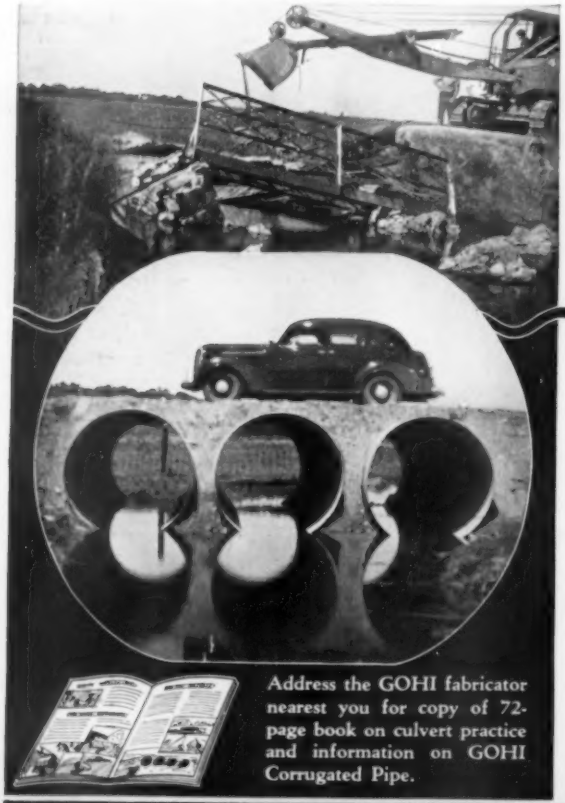


Traf-O-Line—Here is the traffic line marking machine that will put down one or two lines. Single valve controls the starting and stopping.

Each Black Top Road Maintenance Unit with the Littleford Trade-Mark is your assurance of low-cost operation. Every unit is designed and engineered to function efficiently—built sturdy to last longer, gadgetless to eliminate parts which wear out. When buying Road Equipment, insist on a Littleford. Make it an investment, not just a purchase.

LITTLEFORD

LITTLEFORD BROS.
500 E. PEARL STREET
CINCINNATI, OHIO



Address the GOHI fabricator nearest you for copy of 72-page book on culvert practice and information on GOHI Corrugated Pipe.

BRIDGE REPLACEMENTS WITH GOHI PIPE CORRUGATED

Even the most casual observation reveals the fact that more and more large diameter GOHI Pipe is being used to replace small bridges. Lower in first cost, quickly and easily installed, long-lived, trouble-free, wear-, weather- and corrosion-resisting, GOHI Pipe is the logical modern drainage structure designed to give maximum protection to all types of roads, from the country lane to the high-speed trunk highway. Road building dollars go farther when you use GOHI Corrugated Pipe.

GOHI Pipe meets Copper-Bearing Pure Iron requirements of all specifications published by nationally recognized specifying authorities.

New England Bolt Co.	Everett, Mass.
Central Culvert Co.	Ottumwa, Iowa
Capital City Culvert Co.	Madison, Wis.
Bancroft & Martin Rolling Mills Co.	S. Portland, Me.
Denver Steel & Iron Works Co.	Denver, Colo.
The Lane Pipe Corporation	Bath, N. Y.
Dixie Culvert Mfg. Co.	Little Rock, Ark.
St. Paul Corrugating Co.	St. Paul, Minn.
The Newport Culvert Co.	Newport, Ky.

GOHI CULVERT MANUFACTURERS, INC., . . . NEWPORT, KY.

When you write for that catalog, kindly mention THE AMERICAN CITY.

Brick Association Names Cullimore as Secretary

William H. Cullimore has been appointed Engineer and Secretary of the National Paving Brick Association, National Press Building, Washington, D. C. He resigned as Associate Engineer of the Department of Public Works of the city of Baltimore, Md., to accept this position, which was left vacant by the death of George F. Schlesinger in December.

Mr. Cullimore was educated in the Baltimore schools and graduated from Baltimore Polytechnic Institute in 1918, following which he studied civil engineering at Johns Hopkins University for two years and then spent nearly three years with the Paving Commission of Baltimore. In 1923 he became Office Engineer of the Highway Department of Greensboro, N. C., and was later promoted to Assistant Highway Engineer. In 1925 he returned to Baltimore as Assistant to the Sewerage Engineer of the Bureau of Sewers and was then transferred to the position of Associate Civil Engineer of Highways in the City Bureau of Highways. In 1935 he was appointed to the post in the Chief Engineer's office which he held until accepting the secretaryship of the National Paving Brick Association.

New 100-Hp Power Unit Has 6-Cylinder Diesel

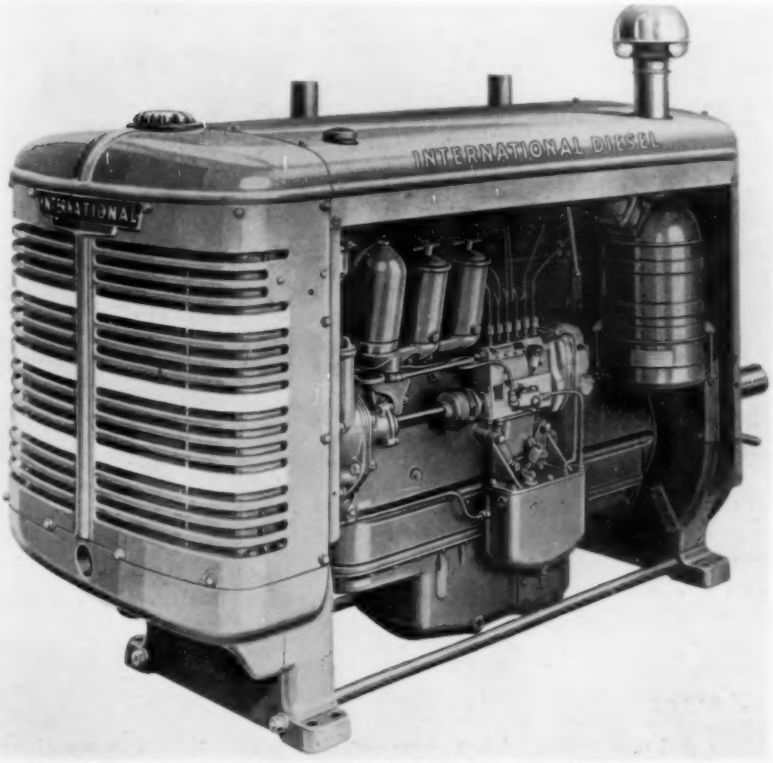
A new 6-cylinder 100-hp diesel power unit, which starts on gasoline and after a minute or less of operation shifts to full diesel operation, has been announced by International Harvester Co., Inc., 180 North Michigan Avenue, Chicago, Ill. This Model UD-18 engine can be cranked by hand as easily as a gasoline engine of the same size. An inexpensive standard 12-volt electric starting system may also be utilized to provide electric starting.

This new diesel power unit is of compact construction with a heavy large-diameter fly-wheel. It has ample weight, approximately 3,875 pounds, without fuel, oil and water, and has reserve strength for heavy-duty service. The cylinders are individually replaceable and are specially heat-treated. The cylinder bore and stroke are respectively 4¾ and 6½ inches. The piston displacement is 691 cubic inches, the regular full-load governed speed 1,400 rpm, and the maximum torque 430 foot-pounds at 800 rpm.

A new 4-cylinder, 22-hp unit has also been announced with most of the same features. This latter unit is described in Bulletin A-59-DD, and the larger unit in Bulletin A-60-DD; both may be secured from the International Harvester Co.

New Permutit Director

S. B. Applebaum, Vice-President and Secretary of The Permutit Co., New York City, has been elected a Director of the company. Mr. Applebaum is the author of many articles in the technical press and has addressed numerous scientific bodies on the development of water-conditioning processes. He has been with The Permutit Co. for more than 25 years, during which he was Technical Manager, before becoming Vice-President.

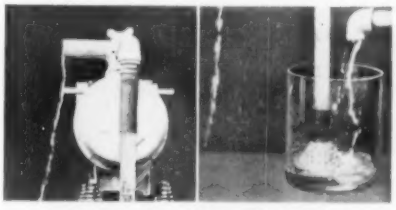


The New Model UD-18 International 6-Cylinder 100-Hp Diesel Power Unit

YOUR BEST BET FOR *all three jobs*

FOR FAST JOBS

When you want pumping in a rush, use a Homelite Portable Pump. It is easy to get to jobs—weighs only 91 pounds complete with built-in gasoline engine. You get instant action—self-priming is *fast*. And it pumps 15,000 gallons per hour without any manual attention.



FOR SLOW JOBS

A Homelite Pump is equally good on seepage. Fast, automatic priming holds seepage constantly at strainer level. Trench work is made much easier. Moreover, a Homelite has a 28-foot suction lift and pumps against 70-foot heads.

FOR DIRTY JOBS

When mud or other solids have to be pumped, a Homelite does it without clogging. The free-flow, self-scouring body of the Homelite passes up to 35% solids without causing any shut-down for cleaning or repairs.

You get more pumping per dollar with Homelite Portable Pumps.

Send for newest bulletin.

HOMELITE CORPORATION

204 Riverdale Ave., Port Chester, N. Y.

"Ay, Mon, She's Braw an' Thr-r-ifty, Too!"

I am at breakfast, when there is a bold step on the porch and a knock at the door. I open it and there is none other than my Scotch friend, Donald MacMurdoch.

"Oliver," he says, stamping his feet, "I've gone and done it!"

"Done what, Donald?"

"Why, mon, I've pur-r-rchased m'sel a new truck," he said with a burr so thick it stuck on his tongue. And not bein' able to resist pullin' his leg a little, I come back at him.

"Are you feelin' all right, Donald," I asks. "You wouldn't be spendin' good money for a new truck when the old one could carry all the laundry in town, would you?'

"But it's a For-r-rd," said Donald, as though that explained everything. "Throw on your sheepskin and take a look."

So I did, and we went outside, with Mamma yellin' at me to button up my coat.

It was a big panel job, painted a fire-engine red, with "Heatherglo Laundry, Donald MacMurdoch, Prop." painted on the side.

"Why didn't you get a red one, Donald?" I ask him.

"It is r-r-red," he answered.

I looked her over from trim front end to rear, and I must admit she is a beauty. I told him so.

"Ay, mon, she's braw an' thr-r-ifty, too," and he looked for all the world like a new father.

"I figur-r-red it oot," he went on. "You canna save money when you're pour-r-ring pr-r-rofits back into repair-r-rs. And you canna get new customer-r-rs with a shabby auld go-cart like the aither truck was. Mon, I'm oot for business, and this truck will tur-r-rn the trick!"

We got inside then and toured around a couple of blocks, and the neighbors that was out all turned to watch us pass.

"Solid comfor-r-rt," said Donald. "And she purr-r-rs like pussy."

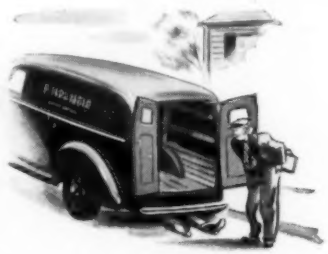
"How many miles to a gallon?" I ask.

"Good enough to suit a Scot," said Donald, "and not a drop of oil has she used!"

We got back to the house, and Donald showed me the door checks, and how they'd put tongue-and-groove planks on the floor to seal it up tight.

"Take a look under-r-rneath, Oliver," Donald said, and bein' a man who is interested in mechanics, I flattened out and scootched under. As clean an underside as ever I saw, with rugged-lookin' driveshaft and springs and a husky axle housin'.

"They know how to build trucks at Ford's, that's one thing sure," I said, crawlin' out.



And then I noticed that my shirt was streaked with dirt, where I'd been on the ground, and Donald sees it, too.

"A shame," he says. And then he gets thoughtful.

"My own fault," I says. "If I'd buttoned my coat like Mamma said, it'd never have happened."

"We-e-el, Oliver," Donald says. "Strip it off and let me take it along. It'll only cost you fifteen cents finished up like new."

"You're right about that truck," I says. "It's gettin' you business already."

"Of cour-r-rse," said Donald. "That fifteen cents is the rate with 10 pounds of rough dry. It ought to be seventeen cents. But seein' thot you're a friend of mine . . . "

Well, what could I do?

Visit the new Ford Expositions at the two Fairs, New York and San Francisco, 1940

FORD V-8 TRUCKS AND COMMERCIAL CARS

Ford

Ford Motor Company, Builders of Ford V-8 and Mercury Cars, Ford Trucks, Commercial Cars, Station Wagons, Transit Buses

The New Lister-Blackstone Powr-Pak Diesel-Electric Power Plant

New Electric Plants with Diesel Power

A new line of diesel-electric power plants ranging from 3,600 to 24,000 watts output, has been announced by Lister-Blackstone, Inc., Milwaukee, Wis. These Powr-Pak plants consist of a radiator cooled engine, generator and control panel, all assembled in compact form ready to set in place and put to work. The chief change from the conventional design is in the placement of the generator, which sets directly underneath the engine and thus cuts the floor-space requirements almost in half.

Power for driving the generator is supplied by a Lister 4-cycle engine using the Bosch fuel system. To insure long engine life, the cylinder walls are chromium impregnated by the Listard process. The patented dual-compression system used on Lister-diesel engines makes starting by hand easy under all temperature conditions without the use of punks, glow plugs, or any other preheating devices, according to the manufacturer.

The generators are available in any desired voltage or current, either DC or single- or 3-phase AC, for stationary or marine service. Further information and descriptive literature may be secured direct from Lister-Blackstone, Inc., 1706 South 68th Street, Milwaukee, Wis., by mentioning this item.

Odor Absorbers for New York Sludge Boats

The three big new tankers used by New York City for hauling sludge from the Ward's Island sewage-disposal plant have been equipped with Dorex activated carbon odor absorbers so that when they make their runs out to sea, no odors annoy adjacent apartment dwellers on shore. Every hatch opening on each boat is equipped with these coconut-shell carbon absorber devices which have a capacity of trapping all odor particles in 25,000 cubic feet of strongly odor-laden air per minute.

These new units have proved themselves useful in other odor problems at industrial plants, restaurants, hospitals and laboratories. Dorex odor absorbers are made by W. B. Connor Engineering Corporation, 114 East 32d Street, New York, from which company complete information may be secured by mentioning this item.

Tuttle and Seelye Join Consulting Practices

Arthur S. Tuttle, formerly located at 10 East 40th Street, New York, who was Chief Engineer and later Consulting Engineer for the New York City Board of Apportionment, New York State Engineer, then State Director for PWA and Consulting Engineer for WPA in New York City, has joined with Elwyn E. Seelye, of Elwin E. Seelye & Co., at 101 Park Avenue, New York, for the practice of engineering, specializing in structural, industrial and municipal engineering, foundations, docks, shore protection, arbitration, field inspection and grade-crossing elimination.

Mr. Seelye, during the last 25 years, has had wide engineering experience including responsibility for the structural design of many important buildings. Before starting an independent practice, he was a member of the New York Central Railroad engineering staff on the Grand Central Terminal improvements and on grade-crossing elimination.

WATER WORKS MEN
are today thoroughly
CONVINCED
that the

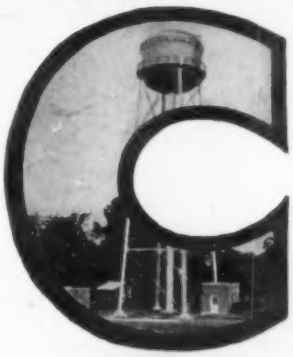
RUSTA-RESTOR TRADE MARK REGISTERED
PATENTED PATS. PEND.

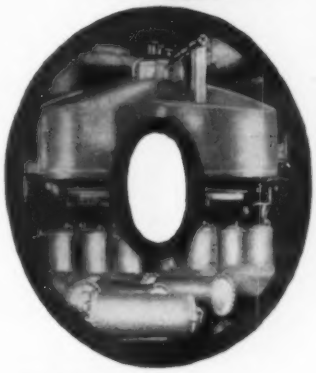
is the only sure method of STOPPING RUST in steel water tanks

MANY ordered their *first* RUSTA RESTOR unit ON APPROVAL. YOU can do the same. We have a number of letters from satisfied users. Would you like to see them? WRITE:—

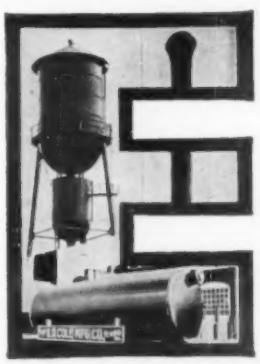
RUSTA RESTOR CORPORATION
1450 W. State St., Fremont, O.

Tank Builders For Over 80 Years!





Tanks, Towers, Kettles, Kiers, Vats, Vessels, Bins, Boilers, Stacks, Standpipes and other fabricated plate-work from your specifications or ours.



Write for "Tank Talk" — 6-A, or let us figure on your requirements.

R.D. COLE MFG. CO.
Established in 1854
NEWNAN · · · GEORGIA

Find out how much more your money buys in a "BEAN"

TALK WITH your nearest BEAN dealer about the 1940 BEAN. See how much *more* you get for your money. *More* in downright rugged construction. *More* in unfailing performance in the field. *More* in years of dependable low-cost service. *More* . . . much more . . . in the all-enclosed BEAN Royal Pump. More for your money in the BEAN than in any other sprayer you can buy.

Write for Special Park Sprayer Catalog

JOHN BEAN MFG. CO.

Division of Food Machinery Corporation

5 HOSMER STREET • LANSING, MICHIGAN
105 WEST JULIAN STREET • SAN JOSE, CALIFORNIA

BUY THE BEST... Buy "BEAN"

AN ATTRACTIVE SPOT IN LINCOLN PARK, CHICAGO

USE THEM IN YOUR PARKS

"SPICKANDSPANTOWN"

— Can You Locate It on the Map? —

It's in many different locations—wherever you find—

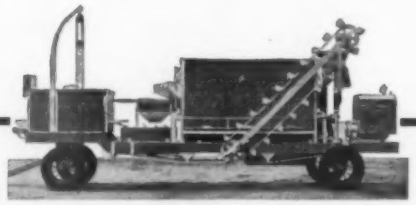
SOLAR
Self-Closing
RECEPTACLES

Use SOLARS to keep your City litter-free. They are easy to use and long-wearing.

Send TODAY for interesting booklet and attractive prices

SOLAR-STURGES MFG. CO.
MELROSE PARK ILLINOIS

USE THEM ON BUSY STREETS



STREET REPAIR TRUCKS

Portable Asphalt Plants—Dryers
Pug Mixers—Asphalt Kettles
Weed Burners—Torches

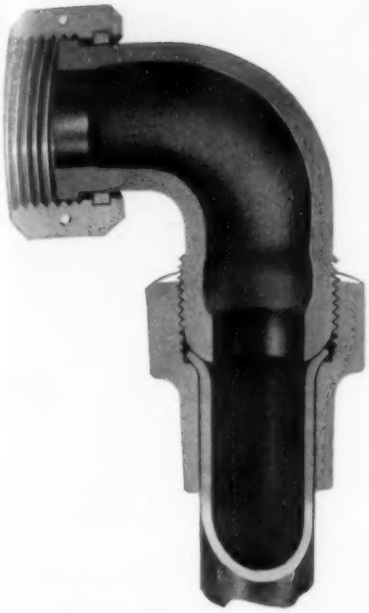
Write for Catalog

Elkhart White Mfg. Co. Indiana

TELLS YOU EVERY TIME YOUR TRUCK Stands Idle —and How Long!

BUSY? IDLE? OVERTIME? The little Servis Recorder "tells all"—as shown on its chart (at left). Thus your motor truck writes its own story daily. You SEE all delays at a glance—and correct 'em! Save up to $500 a year per truck! Over 100,000 trucks now equipped. Money-saving booklet free. The Service Recorder Co., 1375 Euclid Avenue, Cleveland, Ohio.

The Servis Recorder
Keeps Trucks Busy



A Ringstyle Angle Coupling

Meter Settings with Brass Couplings

A complete line of brass valves and couplings, which make the setting of water meters a more simple matter, has been announced by Ford Meter Box Co., Wabash, Ind. The nuts of these Ringstyle valves and couplings are made of seamless drawn brass tubing, which insures smooth and uniform faces on the hexogonal exterior of the nut for easy wrench operation. The nut is held behind the flange of the red brass body by a rectangular brass wire driven through the nut. All these couplings nuts are drilled for a seal wire, the holes being between milled recesses.

A Ringstyle valve takes the place of an ordinary inverted ground-key valve and a bent meter coupling, eliminating the joints between them. It puts the valve right next to the meter, with the tee head on top, so that the valve can be turned easily from above with either a long or a short key. The coupling takes the place of an ordinary bent meter coupling and either an iron pipe coupling or a copper-to-iron pipe-thread fitting, saving this joint also.

These valves and couplings are made for ⅝-, ⅝ x ¾-, ¾- and 1-inch meters, and arranged to connect to iron or copper pipe in ½-, ⅝-, ¾- and 1-inch sizes.

Neon Traffic Lights in Required Colors

The use of neon-type bulbs for stop-and-go traffic signals is reported by the Kneisley Electric Co., Toledo, Ohio, to reduce power costs 70 per cent and to reduce maintenance costs by as much as 85 per cent. The neon lights penetrate fog and as they are available in all traffic colors in the Amglo patented neon bulb, lights are equally effective by day and night and during fog.

The various features of Amglo neon bulbs are described in folder AM-1 which will be furnished by The Kneisley Electric Co. free on request. This company also manufactures flashers which can be mounted on old traffic signs to modernize them in line with progressive highway programs.

Snow-Plows for Walks and Skating Rinks

A reversible blade snow-plow or small V-type snow-plow may be mounted on the Jacobsen basic power unit so that sidewalks, driveways and skating rinks may be plowed in winter, and a sickle-bar attachment may be put on the unit in summer for cutting grass and weeds. The 2-hp, 2-cycle, air-cooled, governor-controlled motor furnished by Jacobsen Mfg. Co., Racine, Wis., has a mechanical pull starter and gives the units a travel speed of 1¾ miles per hour.

The reversible blade snow-plow is heavily reinforced and self-leveling, is 58 inches wide and 21½ inches high, and has a plowing width of 47 inches. The scraping edge is of high carbon steel and replaceable. This plow can be swung a 30-degree angle to either side. The V-type snow-plow is 15 inches high in front and 21½ inches high in the rear, and also has a plowing width of 47 inches. The sickle-bar has a cutting width of 48 inches.

OSGOOD

POWER SHOVELS
DRAGLINES
CRANES
TRUCK SHOVELS, Etc.
⅜ to 2½ Cu. Yds.
HERCULES ROAD ROLLERS

Write for New Catalogs

THE OSGOOD CO.
MARION OHIO

"Now that we use a
SMITH COMPRESSOR
—results are better,
COSTS FAR LESS"

Use this lightweight, portable compressor expect remarkable results

Think of the saving you'll enjoy with a Smith Compressor, MADE FROM FORD PARTS, that uses only one gallon of gasoline an hour—that is priced at LESS THAN HALF the cost of standard compressors of equal capacity!

Use it for finishing work on slopes, testing and repairing joints in concrete pavements, sub-drainage and sewer work and for a wide variety of general maintenance work. There's ample power to operate rock drills, paving breakers, tampers, sand blasts, rivet hammers, spades, picks, carving tools, metallizing guns, paint guns, etc.

60 cu. ft. a minute capacity; pressure up to 175 lbs. a square inch. Head equipped with high speed compressor valves; automatic unloading and idling.

With a Ford Motor and shop facilities you can assemble your own compressor. We will furnish a Smith Compressor Head and Accessories with instructions for mounting.

Write Today!

GORDON SMITH & CO.
425 College St., Bowling Green, Ky.

SENTINELS OF SAFETY

Motorcycle mounted officers exemplify the true spirit of public service. They are real guardians of life and property. Motorists and pedestrians alike respect their presence. They prevent accidents and tragedies. They are "Sentinels of Safety" whose alertness and efficiency in solving countless traffic problems build public confidence for police departments. It is significant that an overwhelming majority of the nation's motorcycle officers are mounted on dependable Harley-Davidson Police Motorcycles . . . Have your dealer bring over a 1940 model for your inspection.

HARLEY-DAVIDSON MOTOR COMPANY, *Milwaukee, Wisconsin*

HARLEY-DAVIDSON

THE POLICE MOTORCYCLE

Large Traffic Signs for Quick Reading

Present roadways range from narrow two-lane roads to modern high-speed divided highways. Modern highways and modern speed demand that a driver know, well ahead of time, what he is to do and, as much for his own safety and to avoid confusing other traffic, be prepared to time and execute his decision promptly and correctly. Signs that are much larger than the standard are being used increasingly to emphasize special hazards on older roads and to meet the requirements of greater legibility distance on the faster new highways.

Painted signs were originally placed in advance of the point to which their instructions applied, largely because they could not be read at night until a driver was close. While the advance installation of signs lost its major purpose when reflectors were introduced to make them readable from a distance after dark, drivers are now so accustomed to this standard practice that it cannot be easily or safely abandoned.

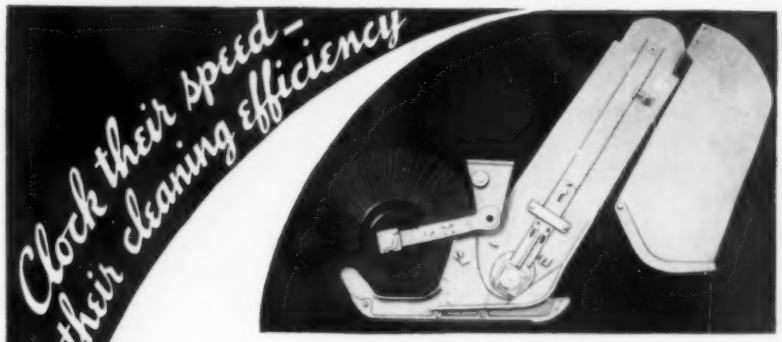
A very helpful discussion of large copy traffic signs with reflector buttons has been prepared by Signal Service Corporation, Elizabeth, N. J., and printed as Bulletin GA-5. Copies of this will be sent to readers free on request.

Helm Re-elected Head of Asphalt Institute

At the Annual Meeting of The Asphalt Institute, New York City, the Board of Directors re-elected Joseph S. Helm of the Standard Oil Co. of New Jersey, President of the Institute for the fiscal year beginning April 1, 1940. Vice-Presidents elected were: A. M. Maxwell of Standard Oil Co. of Ohio; J. A. Blood of Standard Oil Co. of California; and T. M. Martin of Lion Oil Refining Co.

W. H. Kershaw of The Texas Co. was elected Chairman of the Executive Committee, with J. A. Blood, J. S. Helm, T. M. Martin, David Waxman of the Shell Petroleum Corporation, as members. Herbert Spencer of Standard Oil Co. of New Jersey was elected Treasurer, and F. V. Widger of The Texas Co. was re-elected Secretary. J. E. Pennybacker was re-elected Managing Director.

At the Annual Meeting of the Board of Directors of the Institute, which represents three-quarters of the asphalt-producing industry of the United States and Canada, it was announced that asphalt consumption in 1939 was 6,192,000 tons, an all-time high 7 per cent above the previous high record made in 1938. Of this, 75 per cent went into highways; slightly under 20 per cent into building construction; and the balance into miscellaneous uses. The increase of the use of asphalt for highway work is accredited to the development of the low-cost farm-to-market road network. In 1928 asphalt for low-cost roads comprised one-third of the tonnage used for highways, while in 1939 it has grown to two-thirds of the tonnage, 50 per cent greater.



The slow speed broom serves only one purpose—to sweep, not throw or fan, the dirt around. The highly efficient dirt elevator lifts all dirt and trash up and into the dirt box—it's the dirt elevator that guarantees greater cleaning efficiency.

Check the thoroughness of a Hough Motor Pick-Up Sweeper on your most littered street. Compare their cleaning efficiency. You can readily see why the preference is for Hough design and the positive dirt elevator method of gutter cleaning.

Gutters are thoroughly cleaned as only the Hough Motor Pick-Up Sweeper can clean them, with its slow, thorough broom action and pick-up elevator disposal unit. The "pick-up" elevator lifts the trash to the large dirt box, confining the broom action to sweeping. The clean-dumping dirt box is of ample size. Driver control is from the seat. Short-turning radius provides for greater maneuverability and lowest maintenance costs are assured through the use of standard parts.

It's the many miles of cleaner streets per day that have put Houghs out in front as the No. 1 low cost gutter cleaning equipment.

Bulletin 112 details the many exclusive Hough features based on 20 years of building better sweeping equipment. Write for your copy.

THE FRANK G. HOUGH CO.
Libertyville, Illinois
Manufacturers of a complete line of Street Sweepers, Tractor-Sweepers, Sweeper-Blowers and Tractor Shovels.

Gutter brush works in close to the curb. Short radius rear end steering allows for hugging the curves and jockeying in and out between parked cars. Houghs clean playgrounds, walks and alleys, too, in far less time and spic-span clean.

ROAD BUILDING and MATERIALS HANDLING EQUIPMENT
HOUGH
Since 1920
THE FRANK G. HOUGH CO. Libertyville, Illinois (Chicago Suburb)

Truck Buyers Demand Facts—

CHEVROLET GIVES *Certified Proof!*

See your Chevrolet dealer for a copy of the booklet "Certified Proof." It contains all of the figures relative to Chevrolet truck test runs.

AAA

For two years this 1½-ton Chevrolet truck has been engaged in a truck run without parallel either in the history of the automotive industry or in the records of the American Automobile Association. The truck has operated day after day, in all kinds of weather, and on all kinds of roads.

Here are facts about Chevrolet truck performance on the longest truck test run ever conducted under the supervision of the American Automobile Association, using a stock 1½-ton Chevrolet truck, and traveling through Canada, Mexico, and every State in the Union.

Number of miles	**100,015.9**
Payload (exclusive of driver and observer)	**4590 lb.**
Gross weight (with driver and observer)	**9260 lb.**
Average speed	**33.07 miles per hour**
Average miles per gallon of gasoline	**15.10**
Oil actually consumed	**93.29 quarts**
Total cost for repairs, replacements (including twelve tires), gas, oil and lubrication	**$0.00419 per ton-mile**

These facts prove conclusively that Chevrolet trucks are low in operating and maintenance costs, and are exceptionally dependable and durable under the hardest usage.

CHEVROLET MOTOR DIVISION, *General Motors Sales Corporation*
DETROIT, MICHIGAN

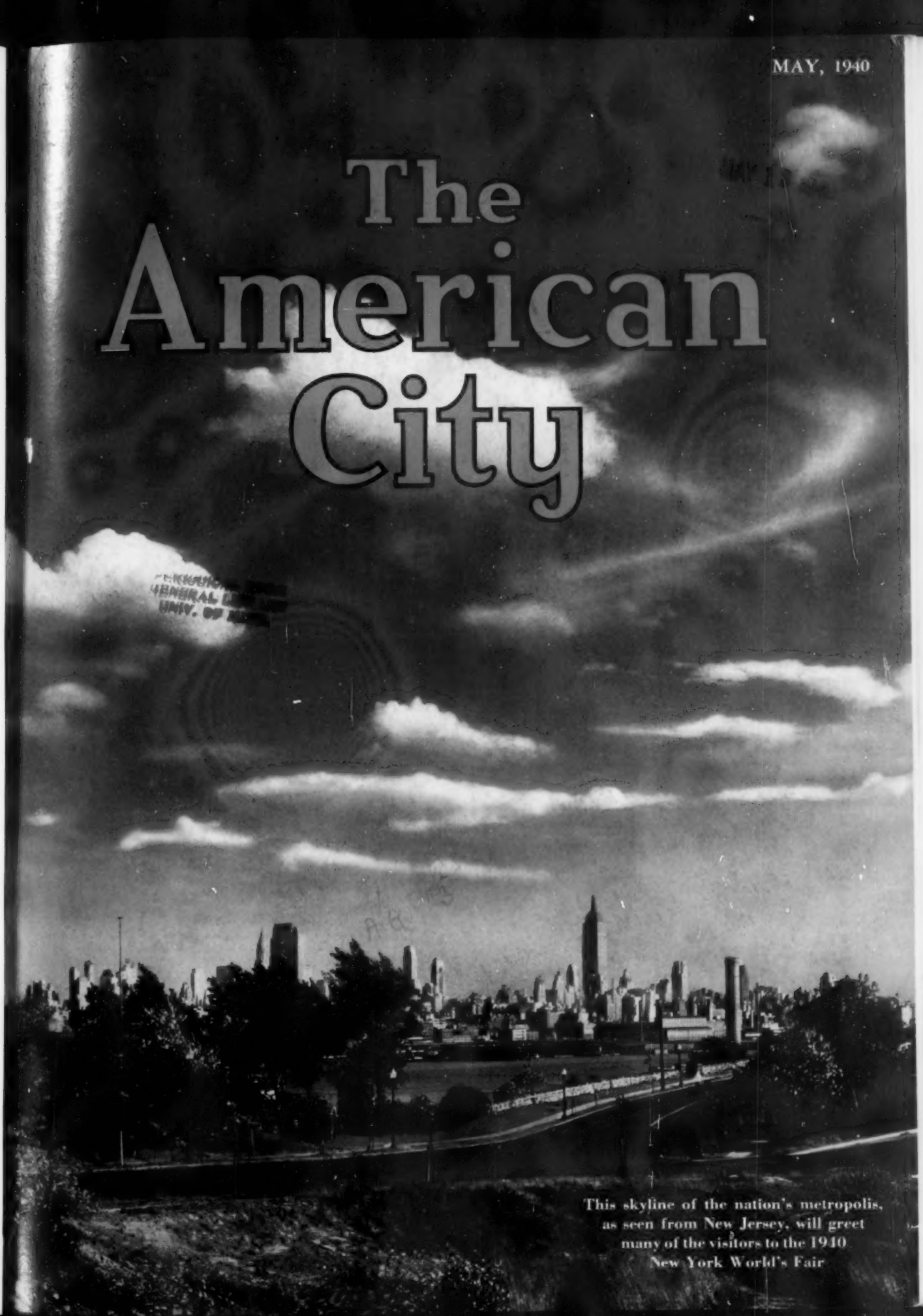
CHEVROLET **BEST HAULERS • BEST SAVERS • BEST SELLERS**

During April we hope you will remember to mention THE AMERICAN CITY.

MAY, 1940

The American City

GENERAL
UNIV. OF



This skyline of the nation's metropolis, as seen from New Jersey, will greet many of the visitors to the 1940 New York World's Fair